CALIFORNIA
FIRE WEATHER
ANNUAL OPERATING PLAN

CALIFORNIA FIRE WEATHER ANNUAL OPERATING PLAN 2011

SECTION ..... **PAGE**

APPENDICES

CALIFORNIA ANNUAL OPERATING PLAN 2011

I. INTRODUCTION

A. The California Fire Weather Annual Operating Plan (AOP) constitutes an agreement between the California Wildfire Coordinating Group (CWCG) comprised of State, local government and Federal land management agencies charged with the protection of life, property and resources within the State of California from threat of wildfire; and the National Weather Service (NWS), National Oceanic and Atmospheric Administration, U.S. Department of Commerce, charged with providing weather forecasts to the Nation for the protection of life and property.

The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community in California. The NWS and CWCG work closely in all phases of the fire weather forecast and warning program to resolve concerns and avoid potential inconsistencies in products and services prior to delivery to fire agency customers. The goal of all agencies is to maximize firefighter and public safety through a coordinated delivery of consistent services.

Fire protection within California is made efficient by the statewide exchange among Federal, State, and local agencies of their responsibilities for the protection of certain lands. Non-federal wildland fire management agencies are by agreement protecting Federal lands, and therefore, require NWS fire weather forecasts and warnings. It is essential that all fire protection agencies receive coordinated fire weather and fire danger services.

B. Roles and responsibilities of the NWS and the interagency fire management community are set forth in the following reference documents:

- Interagency Agreement for Meteorological Services Among the Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and National Park Service of the U.S. Dept. of Interior, the Forest Service of the U.S. Dept. of Agriculture, and the National Weather Service of the U.S. Dept. of Commerce (National MOA or National Agreement);
- CWCG – NWS California Fire Weather Program Assessment Team Charter;
- National Weather Service NWSI 10-4: Fire Weather Services ;
- 2011 National Mobilization Guide ;
- 2011 California Mobilization Guide ;
- National Predictive Services Handbook; and
- NWCG Glossary

C. Participating agencies include the following:

- Federal, State and local fire agencies comprising the California Wildfire Coordinating Group (CWCG);
- The NOAA/National Weather Service offices serving California (see pages 7 and 8)
- Representatives from independent city/county fire agencies

II. CHANGES AND UPDATES FOR 2011

- A new NWS national fire weather web page is available at: weather.gov/fire. User comments and suggestions via the link on this page are strongly encouraged.
- The national Predictive Services program continues to implement the organizational changes made in 2010. The three Functional Areas are Research and Development, Operations and Support, and Outreach and Training.
- Changes have been made to the Red Flag criteria for the Lake Tahoe Basin, following consultation between the LTBMU and the NWS Reno office. See page 15.
- The Prescribed Fire Incident Reporting System (PFIRS) was made 'official' in April 2010. At that time the USFS R5 declared it "an efficient replacement for current local Air District reporting systems; more and more Units and Air districts are signing on, over time.
- The NWS will implement bullet format Fire Weather Watch and Red Flag Warnings nationally this season.
- The NFDRS now has Nelson model capability. For solar radiation-equipped stations, this enables automation of the State of the Weather (SOW) coding. For more information regarding this transition, please see Section V.D, Technology Transfer
- The land management agencies have added, moved, or removed a number of new RAWS stations in the past year. Please check the NFDRS station lists in Appendix F for additions, deletions, etc.
- Changes have been made to the Red Flag Warning criteria for Fire Weather Zone 285 following consultation with the Modoc National Forest and the NWS Medford office. See page 15.

III. SERVICE AREAS FOR NWS OFFICES AND PREDICTIVE SERVICE UNITS

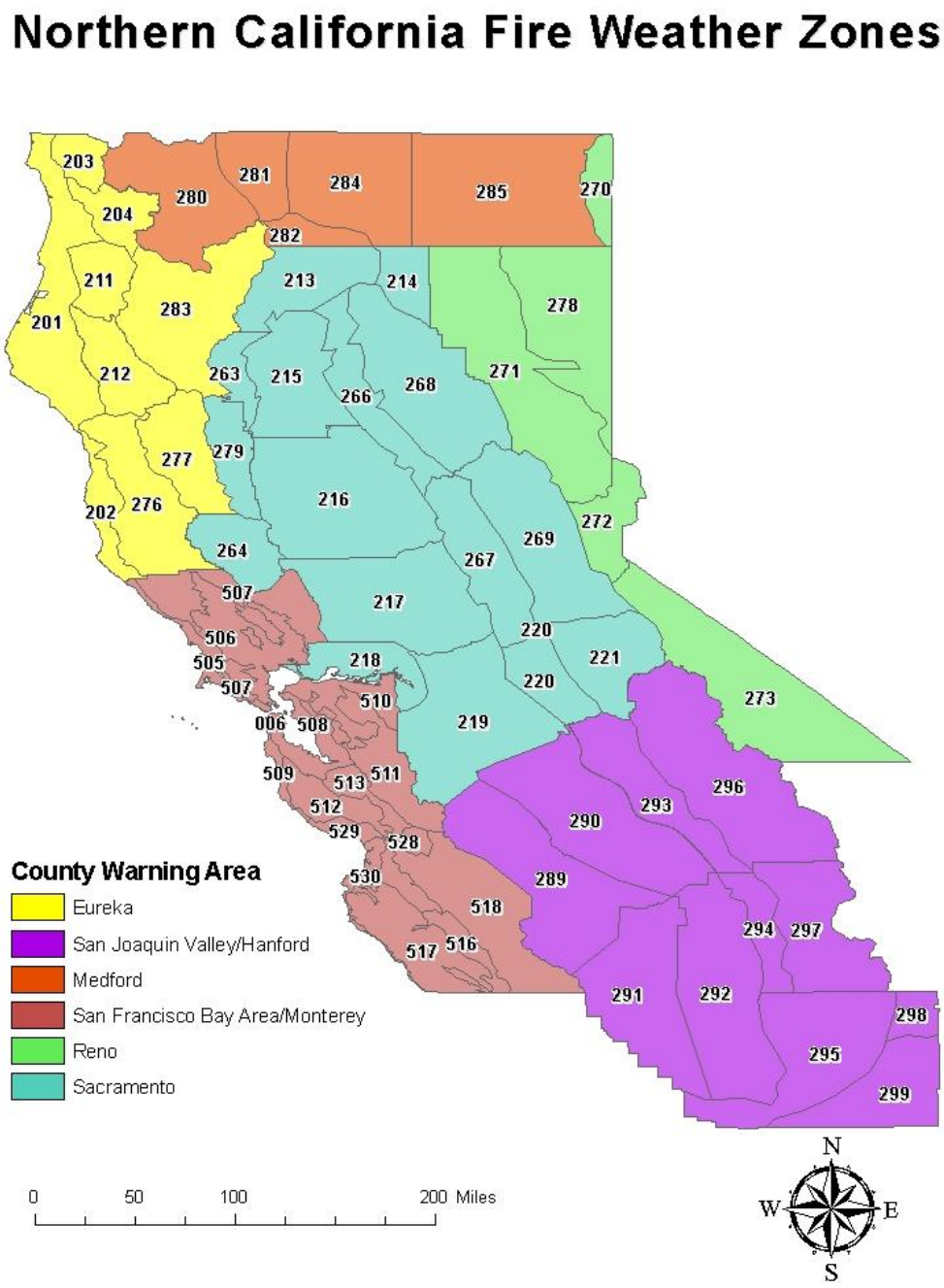
Fire weather forecast services are provided by forecasters at NWS offices and in Predictive Services Units at the Redding and Riverside GACCs. All Red Flag Warnings and Fire Weather Watches, all spot forecasts for wildfires, all forecasts used to develop National Fire Danger Rating System (NFDRS) indices, as well as narrative and/or graphical forecasts for planning purposes, are issued by the NWS. Both groups provide spot forecasts for prescribed burns, narrative and/or graphical forecasts for planning purposes, and have trained Incident Meteorologists (NWS) or Technical Specialists (PSU). Details on these services are contained in this AOP.

A. NWS Weather Forecast Offices (WFOs) Serving California *(bold indicates shared counties)*

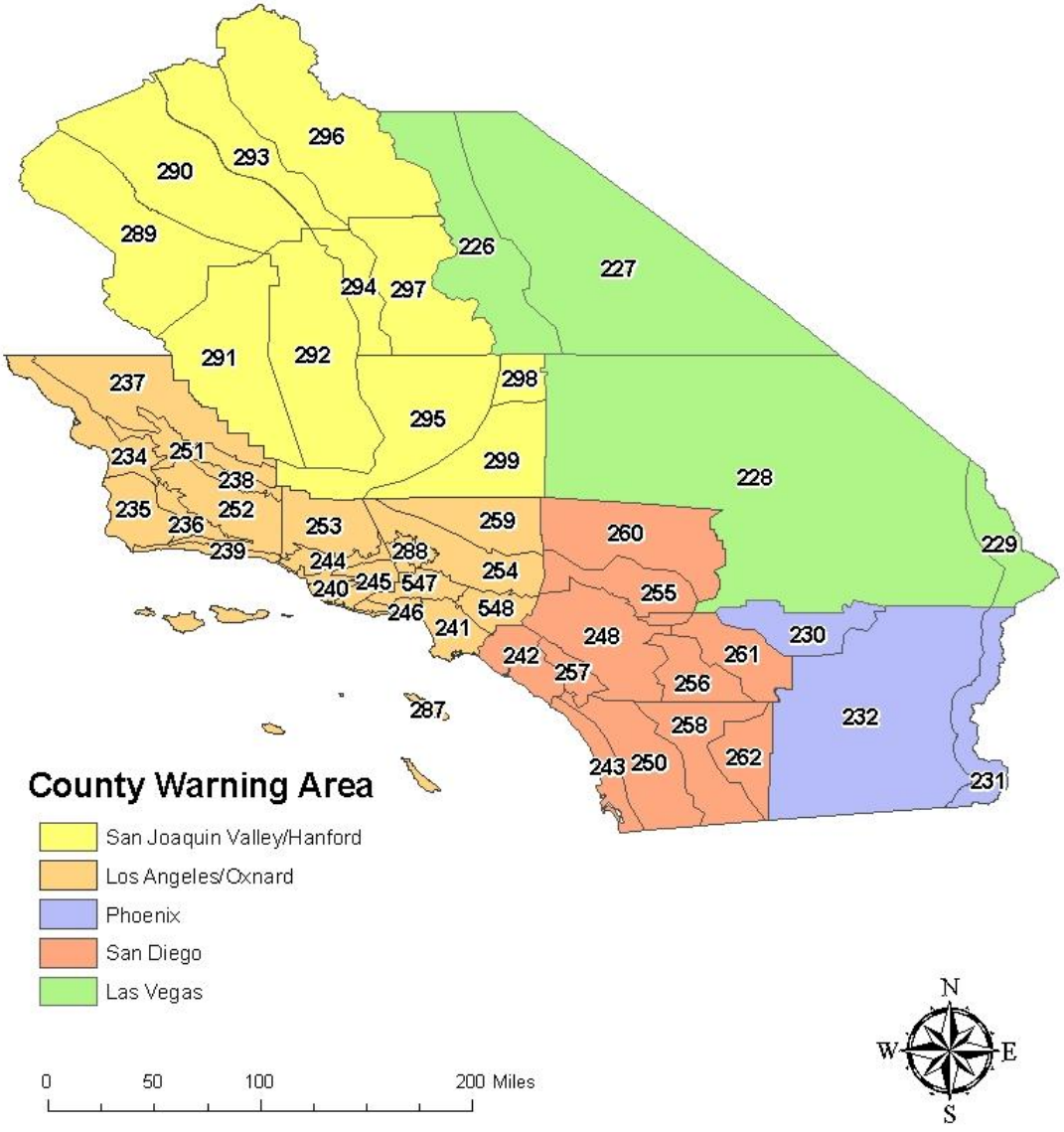
WEATHER FORECAST OFFICE	COUNTIES (including local fire depts.) WITHIN THE FIRE WEATHER FORECAST DISTRICT	FEDERAL AND STATE FIRE AGENCY CUSTOMERS
Medford WFO http://weather.gov/medford	Siskiyou, Modoc	CALFIRE: Siskiyou and Lassen-Modoc Units USFS: Klamath, Modoc, North Shasta Trinity NFs NPS: Lava Beds NM USFWS: Lower Klamath Basin Refuge BLM: North NorCal BLM
Eureka WFO http://weather.gov/eureka	Del Norte, Humboldt, Trinity, Mendocino	CALFIRE: Humboldt-Del Norte and Mendocino Units USFS: Six Rivers, West Shasta-Trinity, West Mendocino NFs BLM: West NorCal BLM NPS: Redwood NP BIA: Hoopa Valley Tribe
Sacramento WFO http://weather.gov/sacramento	Shasta, Tehama, Glenn, Colusa, Butte, Yuba, Sutter, Lake, Yolo, Sacramento, Calaveras, Amador, San Joaquin, Solano, Stanislaus **Western Portions of**: Plumas, Sierra, Nevada, Placer, El Dorado, Tuolumne, Alpine	USFS: South Shasta-Trinity, East Mendocino, West Lassen, West Plumas, West Tahoe, El Dorado, Stanislaus NFs BLM: South NorCal and North CenCal BLM NPS: Lassen NP, Whiskeytown NRA USFWS: North Central Valley Refuges CALFIRE: Shasta-Trinity, West Lassen-Modoc, Butte, East Sonoma-Lake-Napa, Tehama-Glenn, Amador-El Dorado, Tuolumne-Calaveras and West Nevada-Yuba-Placer Units
Reno WFO http://weather.gov/reno	Lassen, Mono **Eastern Portions of**: Modoc, Plumas, Sierra, Nevada, Placer, El Dorado, Alpine	BLM: NE and East NorCal and Northeast CenCal BLM USFS: East Lassen, East Plumas, East Tahoe, Humboldt-Toiyabe, Northern Inyo NFs and Tahoe Basin Management Unit (USFS) CALFIRE: East Lassen-Modoc Unit, East Amador-El Dorado Unit, and East Nevada-Yuba-Placer Units

San Francisco Bay Area WFO http://weather.gov/sanfrancisco	Sonoma, Napa, Marin, Contra Costa, Alameda, San Francisco, San Mateo, Santa Clara, Santa Cruz, Monterey, San Benito	BLM: Hollister BLM (Fort Ord) CALFIRE: West Sonoma-Lake-Napa, San Benito-Monterey, Santa Clara and San Mateo-Santa Cruz Units NPS: Point Reyes NRA, Golden Gate NRA, Pinnacles NM USFS: North Los Padres NF DOD: Ft Hunter-Liggett California State Parks
Hanford WFO http://weather.gov/hanford	Mariposa, Merced, Madera, Fresno, Kings, Tulare, Kern **SE Tuolumne** in Yosemite NP	NPS: Yosemite and Sequoia/Kings NP BLM: Western CenCal BLM USFWS: South Central Valley Refuges USFS: Sierra and Sequoia NFs CALFIRE: Tulare, Madera-Mariposa-Merced and Fresno-Kings Units
Los Angeles/Oxnard WFO http://weather.gov/losangeles	San Luis Obispo, Santa Barbara, Ventura, Los Angeles	CALFIRE: San Luis Obispo Unit NPS: Channel Islands NP, Santa Monica Mountains NRA DOD: Vandenberg AFB USFS: Angeles and South Los Padres NF USFWS: Southern California Refuges
San Diego WFO http://weather.gov/sandiego	Orange, San Diego **SW San Bernardino** **Western Riverside**	USFS: San Bernardino and Cleveland NFs CALFIRE: San Diego, SW San Bernardino and Western Riverside Units BLM: South Coast BLM USFWS: Southern California Refuges DOD: Camp Pendleton & Miramar BIA: Southern California Agency
Phoenix WFO http://weather.gov/phoenix	Imperial **Eastern Riverside**	BLM: California Desert BLM USFWS: Southern California Refuges NPS: Joshua Tree NP
Las Vegas WFO http://weather.gov/lasvegas	Inyo **San Bernardino** (except SW corner)	CALFIRE: Northern San Bernardino and Eastern Riverside Units USFS: Southern Inyo NF BLM: California Desert BLM NPS: Mojave National Preserve, Death Valley NP USFWS: Southern California Refuges

B. National Weather Service Fire Weather Zones



Southern California Fire Weather Zones

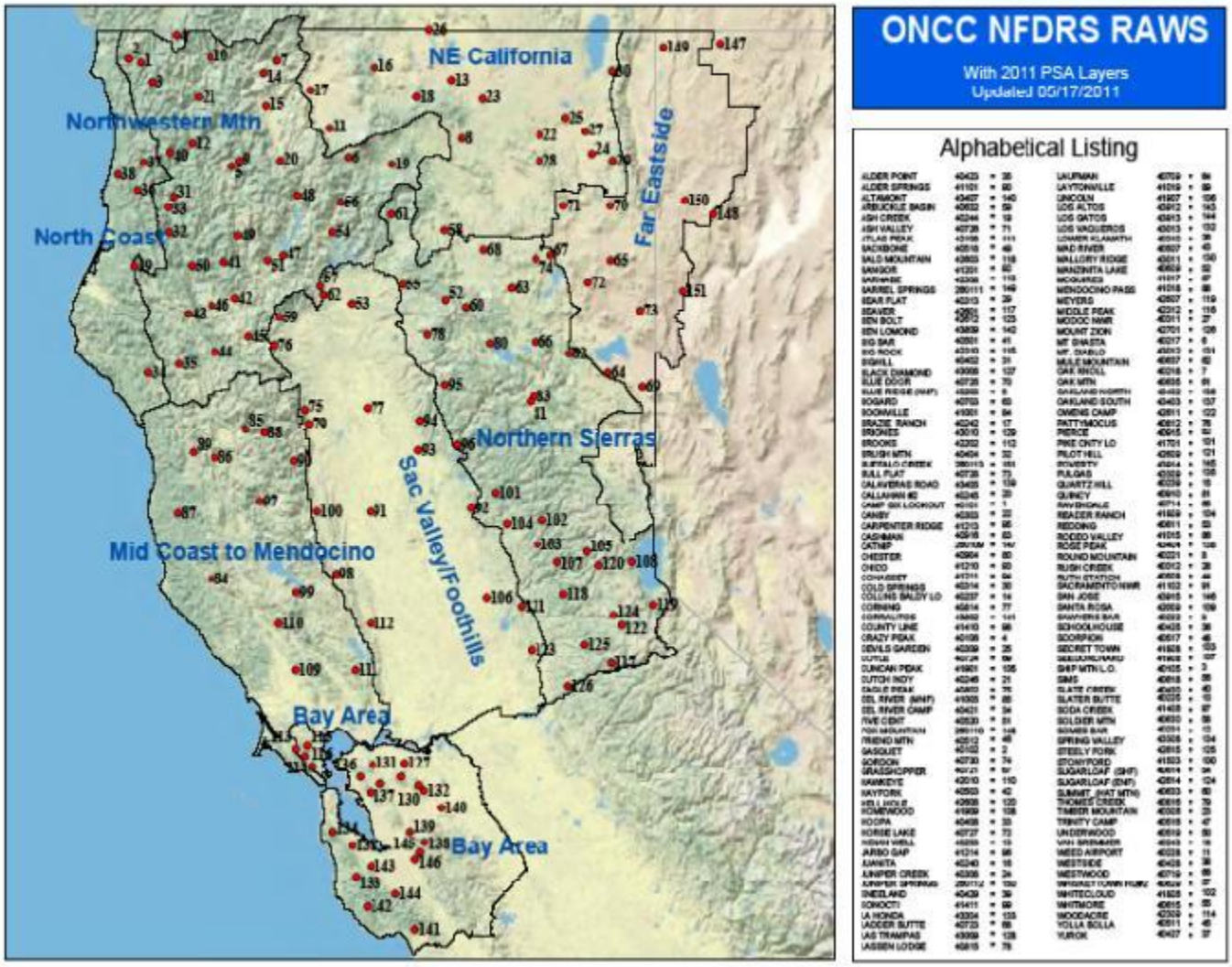


C. Predictive Services Units (PSU) Serving California

Predictive Service Unit	Predictive Service Areas within this PSU
Redding http://gacc.nifc.gov/oncc/predictive/weather/index.htm	NC01 -North Coast NC02 - Mid Coast to Mendocino NC03 - Bay Area NC04 - Northwestern Mountains NC05 - Sacramento Valley / Foothills NC06 - NE California NC07 - Northern Sierra NC08 - Eastside
Riverside http://gacc.nifc.gov/oscc/predictive/weather/index.htm	SC01 - Eastern Sierra SC02 - Central Sierra SC03 - Southern Sierra SC04 - Sierra Foothills SC05 - Central Valley SC06 - Central Coast Interior SC07 - Central Coast SC08 - South Coast SC09 - Western Mountains SC10 - Eastern Mountains SC11 - Southern Mountains SC12 - Lower Deserts SC13 - Eastern Deserts SC14 - Central Mojave SC15 - Upper Deserts SC16 - Northern Deserts

D. Predictive Service Area Maps

Northern California Predictive Service Areas



Southern California Predictive Service Areas

IV. NWS SERVICES AND RESPONSIBILITIES

The NWS supplies fire weather services as outlined in the National Agreement and NWS Directives. Information on current operational NWS fire weather forecast products follows. Significant changes to NWS forecast services or deployment of new operational forecast services will be coordinated with the CWCG.

A. Fire Weather Watches and Red Flag Warnings are issued when the combination of fuels and weather conditions support extreme fire danger and/or fire behavior.

A *Fire Weather Watch* is used to alert agencies to the high potential for development of a Red Flag event in the18-96 hour time frame. The Watch may be issued for all or selected portions of a fire weather zone or zones.

A *Red Flag Warning* is used to inform agencies of the impending or occurring Red Flag conditions. A Red Flag Warning is issued when there is high confidence that Red Flag criteria will be met within the next 48 hours or less or criteria are already being met. Longer lead times are allowed when confidence is very high or the fire danger situation is critical.

Fire Weather Watch and/or Red Flag Warning headlines are included in all affected forecasts. All NWS fire weather web pages also highlight any watch and/or warning issuances.

Red Flag Warning/Fire Weather Watch format and contents - A bullet format text message (RFW) is used for issuing, updating, and cancelling all Fire Weather Watches and Red Flag Warnings.

Complete information regarding the format, content and examples of Fire Weather Watches and Red Flag Warnings can be found here:
http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf

NWS offices normally call affected dispatch offices when Red Flag Warnings and Fire Weather Watches issued or updated. These statements are also are widely available on the Internet via the California Fire Weather web page (http://www.wrh.noaa.gov/sto/cafw/), the web site(s) of the issuing NWS office(s) , the National Fire Weather Page (www.weather.gov/fire), and from WIMS.

Fire Weather Watches and Red Flag Warnings are normally issued only after 1) An accurate assessment of fuel conditions has been determined (see “Qualifying Fuels Information” section), and 2) Conferring with the affected agencies or a representative subset of affected agencies, to include the GACC Predictive Services Units. The Final authority for the issuance of a watch/warning rests with the NWS forecaster.

If issuance of a Red Flag Warning or Fire Weather Watch requires an update of the forecast, the NWS office will verbally notify the Redding and Riverside PSUs as soon as possible. During non-duty hours for the PSUs, contact the GACC Coordinator on Duty (COD) as

available.

1) California Criteria for Red Flag Warnings/Fire Weather Watches

Dry Lightning (Except Fire Weather Zone 285) - A lightning event that is not accompanied by enough precipitation to significantly wet fuels that have been identified as critically dry. Significant precipitation is defined as ranging from .05 inches for grass or brush fuels to .15 inches for closed-canopy timber/heavy fuels. Fire Weather Watches and Red Flag Warnings will be issued for high impact lightning events in receptive fuels. Isolated events or events of short duration (i.e., events which start dry but become wet within an hour or two) do not need warnings but will be headlined in the forecast.

Dry Lightning for Fire Weather Zone 285 (Modoc National Forest)

a) Fuel Conditions:
Fuel conditions must be determined to be receptive/dry enough for lightning fire starts during the occurrence period of the lightning event such that they will be an initial attack problem for the fire agencies in the Fire Weather Zone or Zones in question. Fuel dryness/receptiveness can be determined by the following methods, in ranking level of importance:

i) From the local Fuels Management Officer (FMO) for the Fire Weather Zone or Zones in question, or portion of the Fire Weather Zone or Zones in question. If the local FMO determines fuels are dry enough to constitute an initial attack problem in all or part of a zone, then it is dry enough to issue a Fire Weather Watch/Red Flag Warning.

ii) High to Extreme Fire Danger as determined by the local fire management agency.

iii) The Fuel Dryness Level of the Geographical Area Coordination Center (GACC) 7 Day Fire Potential chart should only be used as part of the decision making process. Dryness levels on the chart in the brown or yellow categories support issuance of a Watch or Warning. If the fuel dryness level in the chart is green, the forecaster must determine if there will be an initial attack concern due to fuel dryness over all or part of the Fire Weather Zone or Zones. In rare cases, fuels may be or, may be becoming, too wet for an imminent large fire concern for the GACC, but are still dry enough, or dry enough for long enough, to be an initial attack concern.

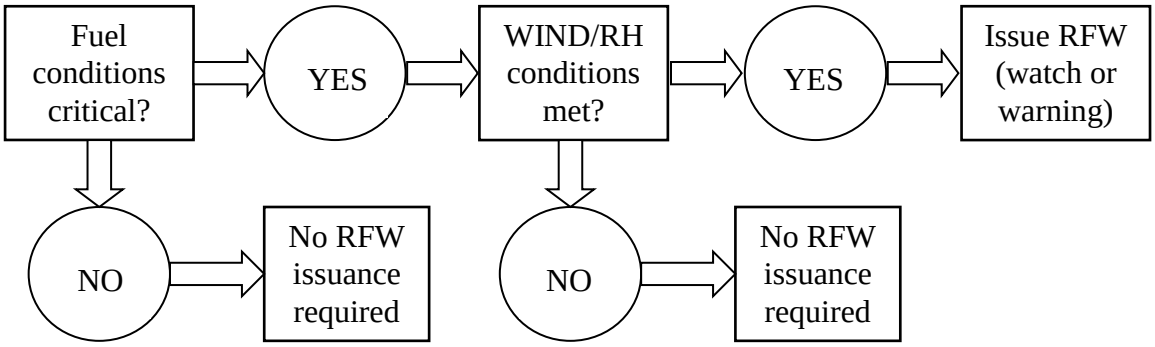
b) Abundant Lightning:

A Red Flag Warning for “Abundant Lightning with Dry Fuels” will be issued when fuel criteria is met and lightning coverage is expected to be scattered or greater, regardless of expected precipitation.

Wind and Humidity - Wind and humidity criteria are geared toward those situations which

may result in rapid spread of wildfires. Because topography and vegetation play a big role in this, several sets of criteria are used across California. Where possible, issuance criteria have been meshed with those used in adjacent states to meet the needs of agencies whose jurisdictions cross state lines. Criteria are listed in the Wind/Humidity Table below.

The normal Red Flag Warning decision process is as follows**:**



c) California RFW Criteria Planning Matrices and Guidance:

Wind/Humidity Table

Area Description	**NWS Fire Weather Zones**	**Criteria**
Southern California desert area excluding the Lower Colorado River Valley	226-228, 230, 232, 260-262	Relative Humidity ≤ 15% and wind gusts ≥ 35 mph for 6 hours or more, assuming fuel conditions are critical.
Lower Colorado River Valley	229,231	Relative Humidity ≤ 15% with sustained winds ≥ 20 mph or wind gusts ≥ 35 mph for 3 hours or more.
Antelope Valley and SE Kern County Deserts	298, 299, 259	Relative Humidity ≤ 15% and sustained (20-foot) winds ≥ 25 mph for a duration of 8 hours or more.
Central California Interior (WFO Hanford)	289-297	Relative Humidity ≤ 15% with sustained winds ≥ 25 mph and/or frequent gusts ≥ 35 mph for a duration of 6 hours or more. OR Relative Humidity ≤ 10% for a duration of 10 hours or more regardless of wind.
Southern California Excluding the Antelope Valley (WFO Los Angeles)	234, 235, 236, 237, 238, 239, 240, 241, 244, 245, 246, 251, 252, 253, 254, 288, 547, 548	RH ≤ 10% with sustained wind ≥ 15 mph or with gusts ≥ 25 mph for 6 hours or more. RH ≤ 15% with sustained wind ≥ 25 mph or with gusts ≥ 35 mph for 6 hours or more.
Extreme Southern	242, 243, 248, 250, 255,	RH ≤ 15% with sustained wind ≥ 25

California (WFO San Diego)	256, 257, 258, 260, 261, 262	mph or with gusts ≥ 35 mph for 6 hours or more.
Northern California West of the Cascade/Sierra Crest	006, 201-204, 211-213, 215-221, 263, 264, 266-269, 276, 277, 279-283, Western 284, 505-513, 516-518, 528-530	Refer to Wind/RH RFW Decision Matrix for Northern California West of the Cascade/Sierra Crest.
Eastern Sierra, Northeast CA (WFO Reno)	214, 270-271,273, 278	RH ≤ 15% with wind gusts ≥ 30 mph for 3 hours or more.
Northeast CA excluding Surprise Valley (WFO Medford)	Eastern 284, 285	Daytime Min RH ≤ 15% with wind gusts ≥ 30 mph for 3 hours or more. OR Daytime Min RH ≤ 10% with wind gusts ≥ 20 mph for 3 hours or more.
Lake Tahoe Basin	272	RH ≤ 20% with wind gusts ≥ 30 mph for 3 hours or more. OR If fuels are at extreme levels: wind gusts ≥ 30 mph for 3 hours or more, regardless of RH.

Wind/RH RFW Decision Matrix for Northern California West of the Cascade/Sierra Crest

- Matrix assumes daytime 10-hour fuel moisture (NFDRS obs time) is ≤ 6%, annual grasses have cured, and no wetting rain (greater than 0.10 inch) has fallen in the past 24 hours.
- The sustained wind refers to the standard 20-foot, 10 minute average fire weather wind speed.
- The wind event should be expected to last for at least 8 hours to qualify for a Red Flag warning. [This guidance was developed for foehn wind events, which normally exceed 12 hours duration, and may last as much as 3-5 days].
- a **'W'** in the matrix indicates that the forecaster should consider a warning.

Relative Humidity	Sustained Wind 6-11 mph	Sustained Wind 12-20 mph	Sustained Wind 21-29 mph	Sustained Wind 30+ mph
Daytime Minimum RH 29-42% and/or Nighttime Maximum RH 60-80%				**W**
Daytime Minimum RH 19-28% and/or Nighttime Maximum RH 46-60%			**W**	**W**
Daytime Minimum RH 9-18% and/or Nighttime Maximum RH 31-45%		**W**	**W**	**W**
Daytime Minimum RH < 9% and/or Nighttime Maximum RH < 31%	**W**	**W**	**W**	**W**

Additional Southern California Qualifying Fuels Information

In order to determine whether fuel conditions warrant Red Flag considerations for a given day, the Predictive Services Unit in Riverside will produce a written discussion on the fuel status across southern California on a bi-monthly basis. This discussion, updated on Thursdays, will be based on input from the fire community and will include a brief description of the current status of the live and dead fuel moistures, including green-up/curing information, as well as expected fuel conditions over the next seven days.

The NWS should refer to this online document as the primary source of fuels information along with the National Fuel Moisture Database located at: http://72.32.186.224/nfmd/public/index.php, but may look at other sources for fuels information.

NWS WFOs whose areas of responsibility include portions of Southern California should also refer to the matrix portion of the "*Southern California 7-Day Significant Fire Potential*" product which is produced by the Southern California GACC Predictive Services Unit (http://gacc.nifc.gov/oscc/predictive/outlooks/Fire_Potential.html).

Non Desert: When a fuel condition of "Dry" (yellow) or "Very Dry" (brown) is displayed on the matrix for any Predictive Service Area (PSA), the "fuels switch" will be considered "on" for that day. A RFW is NOT recommended for any PSA designated as "Moist" (green).

Desert (excluding the lower Colorado River Valley): When a fuel condition of "Very Dry" (brown) is displayed on the PSA matrix, the "fuels switch" will be considered to be "on". **However**, during dry winters and the spring curing season, fuel moistures **over the deserts** may be quite low without initiating serious concerns about the potential for large fire growth. Reasons include light fuel loading and/or discontinuous fuel, or the existence of dry fine fuels

when larger live fuels remain relatively green. The Southern California GACC PSU will coordinate with affected WFOs to clearly communicate fuel conditions, and provide updates regarding spatial trends and changes in large fire potential, despite a "Very Dry" (brown) display on the associated PSA matrix.

1) Red Flag Warning/Fire Weather Watch verification (Reference NWS Verification Directive NWSI 10-1601 and Western Region Supplement 4-2005)

   By January 15th of each year, every NWS office issues a fire weather annual summary for the previous season that includes Fire Weather Watch and Red Flag Warning verification. These reports are available from the fire weather web page of each NWS office.

   Agency feedback on the accuracy and quality of Fire Weather Watches and Red Flag Warnings is strongly encouraged.

   WFO San Diego is evaluating use of a wind potential index forecasting tool that assists forecasters with wind events in the San Diego CWA. Contact WFO San Diego for more information.

B. NWS Spot Forecasts are site-specific forecasts issued for wildfires, prescribed burns, search and rescue operations, aerial spraying, etc., and are available upon request at any time. Spot forecasts are available to any federal, state, or municipal agency as described in NWSI 10-401. When smoke dispersion/smoke management is a concern, prescribed burn spot forecasts may be requested from the PSU at Redding or Riverside.

Spot forecast information is highly perishable. Using up-to-date spot forecasts is important. With this in mind, the NWS expects that the requested issuance time for spot forecasts will be within a few hours of when the requestor will begin using the forecast. NWS Spot forecasts are normally not produced more than 48 hours in advance. If a significant delay occurs – particularly if there is anything in the forecast or in observed conditions which raises concern – it is recommended that the requestor call their NWS office and discuss the forecast with a meteorologist. It is critical to have a working phone number from the requesting agency so they can be contacted.

Issuance Times - Priority for the issuance and desired lead time is as follows:

All NWS spot forecasts are normally available within 30-60 minutes of the request.

Requests for scheduled updates for ongoing spots (such as for a shift briefing) should be submitted to the issuing office with as much lead time as possible and at least two hours before needed.

Prescribed burn Forecasts - Forecasts for original issuances or scheduled updates should be made with as much lead time as possible, with requests made in the afternoon or evening for delivery of a prescribed burn spot the next morning being the recommended lead time.

Forecasts for unscheduled updates for prescribed burn spots, either due to a specific request based on weather at the site or due to monitoring invoked by the phrase, “Request Priority Monitoring” or similar in the remarks section of the spot forecast request, will be issued as soon as possible and no longer than two hours after it is recognized that an update is desirable.

Updated Forecasts - Site-specific forecasts are considered one-time requests and are not routinely updated. However, if determined necessary, updates will be issued if the following occurs:

- Representative observations are available, the meteorologist has been made aware that monitoring is desired, and the meteorologist deems the current forecast does not adequately represent current or expected weather conditions which might affect the burn

  - OR –

- The meteorologist is specifically asked for a verbal or written update, such as when forecast conditions appear unrepresentative of the actual weather conditions.

Corrections - The spot forecast will be corrected when a typographical or format error is detected that prevents correct interpretation of the forecast. Corrections should be delivered to users in the same manner as the original spot forecast when possible.

Access – Use of the Internet is the standard for requesting and retrieving NWS spot forecasts and should be used when available. Spot forecasts can be accessed from the California FireWeather Web page (http://www.wrh.noaa.gov/sto/cafw/), http://www.weather.gov/fire, all NWS office fire weather web pages, and PSU web pages. When Internet access is not available, spot forecasts may be requested and disseminated via phone or fax using the backup spot forecast request form found in Appendix E. Since the fax is a backup means of requesting a Spot forecast, it is important that the requester follow up the fax with a phone call to the responsible NWS office to ensure that the fax was received and is readable.

At or before the time of a spot request, the requesting agency should provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone number(s) of the responsible land management personnel. Also, quality representative observation(s) at, or near, the site of the planned prescribed burn, or wildfire, should be available to the responsible WFO along with the request for a spot forecast(s). Internet-based spot request programs and the backup form both provide blocks to fill in these data.

Upon completion, spot forecasts are posted to the appropriate Fire Weather Page of the NWS forecast office web site that received the request. NWS web sites may be linked from the Individual Forecast Information Table.

Content and Format – Exact content depends on user request. Headlines are always included if a Red Flag Warning or Fire Weather Watch is in effect at the time of issuance.

The forecast period is based on user request and will contain up to three periods, such as

"TODAY", "TONIGHT", and "FRIDAY." If requested and if enough weather information is received to make it feasible, a more specific first period such as "AT 11 A.M. IGNITION" may be used. In these cases, the meteorologist will not just forecast for the planned ignition time, but will include significant changes expected in the forecast parameters for the rest of the usual period, e.g., 11 AM temperature and the expected daytime maximum temperature.

When requested, an outlook for a longer duration will be appended, such as "OUTLOOK FOR WEDNESDAY THROUGH FRIDAY" for a spot requested on Monday.

The most commonly requested forecast parameters are the following:

- Discussion
- Sky/Weather (including chance of rain)
- Maximum/Minimum Temperature
- Maximum/Minimum Relative Humidity
- 20-Foot Winds

Other elements, such as transport winds, mixing height, LAL, etc., may be included upon request.

The basic format of a Fire Weather Spot (FWS) request can be found in Appendix B by clicking on the FWS header under the desired issuing office.

Spot Forecast Feedback Requirement - Agencies will follow-up requests for spot forecasts with a telephone call to the appropriate NWS forecast office to ensure receipt of the request. It is critical that agencies have accurate NWS phone number information for this purpose. Requesting agencies are also highly encouraged to provide fire-line weather observations for the validation of weather forecast accuracy. For further explanation of the Feedback process, see Fire Weather Observations.

Beyond 48 hours, the fire weather planning forecast should be consulted along with user-driven "point and click" planning products available from all NWS office web pages. These products can be used for planning up to seven days out to identify time periods during which weather for a prescribed burn or other project is favorable. Included in this service is weather forecast data for FARSITE (FIREPRO or FSPRO). For more information or a demonstration of these web–based fire weather planning services, please contact your servicing NWS office.

C. NWS Fire Weather Planning Forecasts provide general, information for daily preparedness and planning purposes. Forecasts are subdivided into meteorologically and topographically similar forecast areas called zones. They are not to be used in lieu of spot forecasts. The table below outlines issuance times of planning forecasts for each NWS office. The beginning and ending date of high season forecast issuances vary by year, depending on weather and fuel conditions.

Weather Forecast Office	High Season Narrative Forecasts	Morning Narrative Forecast NLT	Afternoon Narrative Forecast NLT	Low Season Narrative Forecasts NLT	NWS Forecast Zones
Extreme Northern California – Medford	*Usually by June 1 to November 1 #*	7:30 a.m.	3:30 p.m.	Daily 3:30 p.m.	280-282, 284, 285
Northwest California – Eureka	*Usually by June 1 to November 1 #*	7:30 a.m.	3:30 p.m.	Daily 3:30 p.m.	201-204, 211, 212, 276,277, 283
North Central California – Sacramento	*Usually by June 1 to November 1 #*	7:30 a.m.	3:30 p.m.	Daily 3:30 p.m.	213-221, 263, 264, 266-269
Extreme Eastern California – Reno	*Usually by June 1 to November 1 #*	7:30 a.m.	3:30 p.m.	Daily 7:00 a.m.	270-273, 278
Central Coast California – San Francisco Bay Area/Monterey	*Usually by June 1 to November 1 #*	7:00 a.m.	3:00 p.m.	Daily 3:00 p.m.	006, 505-513, 516-518, 528-530
Central California Interior – San Joaquin Valley/Hanford	*Usually May 15 to November 15 #*	7:00 a.m.	3:30 p.m.	Daily 3:00 p.m. PST or 3:30 p.m. PDT	289-299
Southwest California – Los Angeles/Oxnard.	*Usually May 15 to December 1 #*	9:30 a.m.	3:30 p.m.	M-F 3:30 p.m. also M at 9:30 a.m. *	234-241, 244-246, 251-254, 259, 288, 547,548
Extreme Southwest California – San Diego		7:00 a.m.	2:30 p.m.	Daily 7:00 a.m.	242, 243, 248, 250, 255-258 260-262
Southeast California – Phoenix		7:30 a.m.	3:30 p.m.	Daily 7:30 a.m.	230-232
Southeast California – Las Vegas		7:00 a.m.	3:30 p.m.	Daily 7:00 a.m.	226-229

** excludes Federal holidays*
 # Customer coordinated depending on weather/fuels; two weeks notice preferred for NWS WFOs

Update/Corrected forecasts – Planning Forecasts are updated or corrected upon issuance of a Fire Weather Watch or a Red Flag Warning, when the current forecast does not adequately describe significant weather expected in the future, or when typographical/format errors prevent proper interpretation of the forecast.

Access – Planning Forecasts are widely available from the California Fire Weather Page (http://www.wrh.noaa.gov/sto/cafw/), NWS office web sites, and Predictive Services web sites

(see Section III above). All NWS fire weather information can also be accessed from the NWS National Fire Weather Page at: www.weather.gov/fire. Forecasts are also available via WIMS.

Content and Format – Forecasts follow the national standard narrative format, per NWS Directive 10-401. Morning forecasts focus on the next 36 hours and afternoon forecasts on the next 48 hours, with general extended outlooks in both cases out to at least five days.

Planning Forecast begin with pertinent headlines and a non-technical weather discussion. Headlines are included as needed for Red Flag Warnings and Fire Weather Watches. Headlines for critical fire weather conditions that do not meet Red Flag criteria are also included. Discussions should normally be no more than 8 lines in length. A more detailed, technical weather discussion is available in the Area Forecast Discussion (AFD) product which can be found on each forecast office website.

Short-term forecast for the first 36 or 48 hours - Short-term forecasts emphasize information needed for initial attack and day-to-day fire management. Each forecast zone or zone grouping contains the following elements, listed in the order they appear:

- Headline(s) as appropriate
- Sky/Weather
- Temperature
- Relative Humidity
- Wind – 20-foot, 10 minute average RAWS standard (slope/valley and ridgetop, as appropriate)
- Chance of Wetting Rain (CWR)
- Lightning Activity Level (LAL)

Forecasts may include the following optional elements based on local customer requirements:

- Haines Index
- Mixing Level or Mixing Height
- Marine Layer
- Transport Wind
- 10,000-foot Wind
- Ventilation Category (or numeric value)
- 24-hour Trends (of temperature and relative humidity)

Descriptions of forecast parameters can be found in Appendix A.

Extended Outlook - Beyond 36-48 hours, planning forecasts are used for resource planning. They contain general guidance information, keying on significant changes in temperature, humidity, wind, or weather needed for decision-making purposes.

Examples of NWS Fire Weather Planning Forecasts (FWF) can be found in Appendix B by clicking on the FWF header under the desired issuing office.

D. National Fire Danger Rating System (NFDRS) Forecasts

The NWS provides weather forecasts for parameters that permit the NFDRS software to predict the next day's fire danger indices *that the land management agencies utilize for fire management decision support.*

Criteria for Issuance – NWS will issue daily forecasts for use by the NFDRS during periods determined in consultation with land management agencies. Dates during which these forecasts are needed vary by year and by office.

NWS NFDRS trend or point forecasts are usually available to fire agencies by 1500 LST/1600 LDT/2300 Z. *The goal of the land management agencies is to provide quality observations in a timeframe that provides the NWS an hour to review the NFDRS observations and publish the forecasts. In order to meet these goals, the daily NFDRS fire weather observations must be made available to the NWS from WIMS in collectives by 1400 LST/1500 LDT/2200Z.* NFDRS stations that do not have valid observations available in WIMS on time will not have next day fire danger indices available.

The observation data that the land management agencies utilize for NFDRS outputs is typically available to the agencies between 1300 LST/1400 LDT/ 2100 Z and 1340 LST/1440 LDT/2140 Z. To facilitate timely delivery of the NFDRS observations to the NWS, the agencies must strive to have their local quality control and data entry completed in WIMS by 1340 LST/1440 LDT/2140 Z. Collectives are run at 10-minute intervals beginning at 1330 LST/1430 LDT/ 2130 Z, with the last collective run at 1410 LST/1510 LDT/2210 Z. Depending on local needs, these times can vary. *It is important that land management agencies and their supporting WFO discuss and mutually agree to the timeframes that best meet their collective needs.*

Users who fail to meet the last collective, and want an NFDRS forecast for the following day, must coordinate with their local WFO to try and arrange for an updated forecast. Solutions to on-going timeliness problems should be coordinated between the local user, WFO and GACC Predictive Services Unit.

NWS forecasters should contact USFS Fire & Aviation Management Helpdesk (24/7) in Boise, ID (1-800-253-5559) for assistance in dealing with WIMS issues.

Content and Format – Complies with NWSI 10-401 and is outlined in Appendix B4 for reference.

Procedures – For every NFDRS observation received from WIMS at the 1400 LST (1500 LDT) collective, forecast weather parameters for 1300 LST (1400 LDT) the next day will be produced. This will occur through zone trend, station trend, or station specific (point) forecasts. Regardless of the forecast methodology, forecast values for NFDRS stations should not unduly deviate from historical possibility for those stations. For this reason, zone and station trend forecasts are usually favored over station specific (point) forecasts.

10-Hour Fuel Moisture Trends – The U.S Forest Service Region 5 (California) uses the Sale Activity Level (SAL) Program to regulate timber sales and other contracts on public lands. SAL uses forecast 10-minute wind speed trend and forecast 10-hour fuel stick trend. As a result, a 10-hour fuel moisture trend should be provided by the NWS. In order for this to occur, the NFDRS trend forecast should make no entries in the trend forecast for maximum and minimum temperature or maximum and minimum relative humidity, but instead it should include a 10-hour fuel moisture trend.

If no entry is made for the forecast 10-hour fuel moisture trend, WIMS will use computed 10-hour fuel moisture from an algorithm and will determine a trend. Problems arise with this approach since the trend varies from station to station and the computed value is lower than what would be provided from a weighed stick. This results in a higher SAL number and more restrictions.

NFDRS Collective and Bulletin Times (local variations allowed depending on need)

WFO	GATEWAY Routine	Header	1st OBS Collective	2nd OBS Collective	Forecast Observations	GATEWAY Routine	Header	Observed NFDRS Indices Bulletin #1	Observed NFDRS Indices Bulletin #2	Forecast NFDRS Indices Bulletin
Eureka	SENDOBS	SHUS66	2130	2215	2245	SENDNFDR	FNUS46	2130	2205	2245
Hanford	SENDOBS	SHUS66	2130	2205	2245	SENDNFDR	FNUS46	2145		2245
Las Vegas	SENDOBS	SHUS65	2115	2145	2245	SENDNFDR	FNUS45	2100		2145
Los Angeles	SENDOBS	SHUS66	2130	2200	2245	SENDNFDR	FNUS46	2130	2200	2245
Medford	SENDOBS	SHUS66	2155	2155	2305	SENDNFDR	FNUS46	2200		2245
Monterey	SENDOBS	SHUS66	2130	2200	2245	SENDNFDR	FNUS46	2130	2200	2245
Phoenix	SENDOBS	SHUS65	2115	2200	2245	SENDNFDR	FNUS45	2115	2155	2245
Reno	SENDOBS	SHUS65	2145	2145	2255	SENDNFDR	FNUS45	2145		2245
Sacramento	SENDOBS	SHUS66	2145	2205	2301	SENDNFDR	FNUS46	2145		2245
San Diego	SENDOBS	SHUS66	2130	2200	2245	SENDNFDR	FNUS46	2130	2200	2245

E. Participation in Interagency Groups

NWS offices providing service within California are expected to provide representation at regional AOP meeting(s) as defined in the California FWPAT Charter. NWS offices also interact with local fire management units to strengthen the customer relationship and address local concerns.

F. Additional Services

NWS will provide and maintain a cadre of trained Incident Meteorologists (IMETs).

G. Forecaster Training

Any NWS meteorologist producing fire weather products must meet the requirements set forth in NWS Directive 10-405 and the following currency requirements set forth by the CWCG:

- Prepare and issue at least 15 fire weather planning forecasts in the last 12 months at the current duty station; and
- Prepare and issue the lesser of at least 10% of office spots or at least 5 spots in the past 12 months; and
- Successful completion of all WFO fire weather drills and/or training seminars in the past 12 months.

If fire weather currency lapses, the forecaster must work no less than three (3) shifts with a forecaster who is current, handling all fire weather duties.

V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

Wildland Fire Agencies' programs provide Geographic Area and national products for the strategic role of resource prioritization and utilization. The Redding and Riverside GACCs are the two focal points within California for the mobilization, demobilization, and pre-positioning of personnel and resources for all wildland fire management agencies within California. Fuels management is a priority for all wildland fire agencies within California. The California GACCs are charged by CWCG with the coordination and oversight of personnel and resources for accomplishing these projects.

PSUs in Redding and Riverside provide fire weather and fire potential predictions and assessments to fire managers through the Predictive Services Program. PSU meteorologists are also liaisons with the California Air Resources Board (CARB) and Air Quality District officials.

More information on Predictive Services is available at:
http://www.predictiveservices.nifc.gov/NPSG/npsg_pdf/PSHandbook_2009Update.pdf

A. Operational Support and Predictive Services

GACC meteorologists at the PSUs in Redding and Riverside combine meteorological information into area-wide summaries and briefings. These meteorologists work in conjunction with Fire Intelligence staff to form the Predictive Services group, which produces integrated fire weather/fire potential assessments for California. The intent of Predictive Services is to provide strategic, regional, and sub-regional information to assist in preparedness, movement, and allocation of fire-fighting resources. All products are available online, and can be obtained from either the North Ops PSU web site: http://gacc.nifc.gov/oncc/predictive/weather/index.htm or the South Ops PSU web site: http://gacc.nifc.gov/oscc/predictive/weather/index.htm.

1. Routine Predictive Services Products (Examples provided in Appendix C)

a. Daily Weather Outlook- This product provides fire personnel with a quick-briefing tool for obtaining weather highlights of Days 1 and 2 weather in their Geographic Area. The GIS-based graphics in this product combines three elements from the NWS' national gridded database, including predicted minimum RH, wind speed and wind direction. The Predictive Services meteorologists produce the graphics, write a weather synopsis, add appropriate

weather symbols to the map, and write a 3 to 7 Day Outlook section which highlights any anticipated significant fire weather for that period.

Issuance Schedule: South Ops 0930 LT and North Ops 1000 LT. Issued daily during fire season, and M-F during the off season.

b. 7-Day Significant Fire Potential Product: This product forecasts the potential for significant fires through the next seven days. The "large fire" definition, which varies by Predictive Service Area, is used to define "significant". The product table consists of:

1) Fuel Dryness
   - Moist Fuels (Green) – Little if any threat for large fires.
   - Dry Fuels (Yellow) – Low threat for large fires when a Significant Weather Trigger is absent.
   - Very Dry Fuels (Brown) – Moderate threat for large fires when a Significant Weather Trigger is absent.

2) Significant Weather Triggers
   - Lightning
   - Wind
   - Unseasonably Hot and Dry

3) High Risk Day

   High Risk Days are rare occasions when conditions exist that historically have yielded in a significantly higher than normal chance for a new large fire or for significant growth to occur on existing fires. On average, days in this category have about a 20% or better chance of having either one of these two situations occur. There are two conditions that would lead to the issuance of a High Risk Day: 1) A Critical Burn Environment or, 2) An Ignition Trigger.
   - (Red) – Occurs when "Dry" or "Very Dry" Fuel Dryness conditions coexist with a Significant Weather Trigger. The combination of these two factors will create conditions that historically have resulted in large fires across California.
   - (Orange) – Occurs when environmental conditions support a high likelihood of fire ignition or significant growth on existing fires absent a specific ignition trigger.

The product also contains a narrative section consisting of a Weather Synopsis, a Fire Potential discussion, and a Resource Capability summary as defined in the California Mobilization Guide.

Issuance Schedule: By 1030 local time daily during fire-season. Predictive Services will notify the appropriate National Weather Service office(s) of the issuance of any High Risk Days.

c. Monthly and Seasonal National Fire Weather/Fire Danger Outlooks: These Outlooks combine all available weather, climate, fuels, and fire danger information in order to make a prediction of fire activity across the country for the next 30 days (monthly), and the next 90 days (seasonal). These outlooks try, when possible, to highlight the periods and potential for large fire activity and resource utilization, relative to normal. Redding Predictive Services produces a local version of the Monthly Outlook, while the Riverside Predictive Services produces a local version of both the Monthly and Seasonal Outlooks. Both California PS Units

contribute content for the National Monthly Outlook (Month 1) and Seasonal Outlook (Months 2-4), both published on the 1st of each month by the NIFC PS Unit.

Issuance Schedule: Year round, prepared a few days prior to start of the new month and posted on the website by the 1st.

d. Fire Season Assessments: These are estimates of fire potential for longer periods, ranging from three months to an entire fire season in duration. A nationwide collaboration of meteorologists, climatologists, and fuels and fire danger specialists takes place in spring. Season-to-date precipitation, snow pack, temperature and fuels information is melded with a consensus climate forecast to predict fire season severity.

Issuance Schedule: A pre-season assessment (preliminary) is done in late April. In California the main seasonal assessment is issued in late May or June, containing any necessary updates and added detail from the earlier preliminary. If necessary, a second adjustment is done about mid fire season.

e. Webcast: New for 2011 season, a 3-4 minute audio/visual briefing describing weather, fuels, and fire potential information for the Geographic Area for the next 5 to 7 days. Currently this product is only available from Riverside. Issued M-W-F during the winter and M-F during fire season.

2. Other Predictive Services Products, Projects and Services

a. Prescribed Burn Spot Forecasts - The PSUs provide site-specific prescribed burn (spot) forecasts, for any requesting agency, when smoke dispersion and/or smoke management are concerns. Along with this program, the PSUs work closely with the California Air Resources Board (CARB), the Air Districts, and Air Pollution Control officers. The PSUs sponsor daily conference calls at 1300LT, with prescribed burn managers, CARB, and the air districts. These calls help coordinate burning, especially during “marginal burn days” as outlined in the most recent version of Title 17. If agreed upon with the NWS, Predictive Service Units can also provide spot forecasts when the strategy does not include pursuing full perimeter control. (i.e. “Monitor/ Confine/ Contain” strategies)

b. CANSAC Update – California and Nevada Smoke and Air Consortium (CANSAC). The WRF model has been running on the new hardware at the CEFA/DRI facility for about one year. This mesoscale model has improved resolution, with three domains at 2-, 6-, and 18-km grid spacing, versus the MM5 at 4-, 12-, and 36-km. The WRF graphics are at this website: http://www.cefa.dri.edu/COFF/cansac_output.php?model=wrf and those for the MM5 remain at http://www.cefa.dri.edu/COFF/cansac_output.php.

CANSAC changes for 2011 include:
- Trent Procter has replaced Susie Stingley as the Board chair-person.
- Recent product additions are a 72-hour total precipitation graphic (see the 2- and 6-km domains) and a Sfc Relative Humidity graphic in the Tahoe area sub-domain, under Air Quality products.

- By August 2011, the WRF model will become CANSAC's main operational model, as the MM5 is not supported any more. Operational Applications Group (OAG) is working with CEFA to get completion on a few remaining 'tweaks' desired in the appearance and labeling of a few key WRF graphics.
- A user-customized product menu capability is now available, requiring a user-specific login and PW. The OAG is working with CEFA to implement several additional features that will make this capability more user friendly. It is expected these changes will be in place by late June of 2011.

c. Other Ongoing or New Projects -

- Participation in regional and national (NPSG) committees and workgroups
- Leadership in the FIRESCOPE Predictive Specialists Group and co-leadership along with the NWS of the California Fire Weather Program Assessment Team
- South Ops PS Unit has set up a committee to explore development of a 'Predictive Services App', so that we can deliver our web products in a way optimized for mobile devices. We need to reach this fast-growing audience.
- Continue to provide any requested support for WFDSS, the Wildland Fire Decision Support System.

B. Program Management

1. RAWS – The Regional RAWS Coordinators of the various agencies manage the interagency RAWS program within California. This includes regular monitoring of data quality and assisting with station maintenance and acquisition issues. It also involves development of and assistance in providing RAWS training classes. Current agency RAWS coordinators in California include:

USFS	Russ Gripp	(530) 598-4172 (C)	841-4439 (D)
	John Snook	(530) 226-2730 (D)	
	Matt Shameson	(951) 782-4850	
BLM North	Steve Leach	(530) 226-2730	
NPS	Corky Conover	(559) 565-3129	
CALFIRE	Doug Forrest	(916) 653-6608	

2. Liaison – The PSU Program Managers at each Geographic Area serve as a liaison between field fire managers and various service providers including the NWS, the private sector, and the research community.

C. PSU Meteorologists Proficiency and Currency

1. Proficiency

a) Completion of S-190, S-290, and S-390
b) Work no less than five (5) shifts handling all operational products as listed in section V.A.1.
c) Conduct at least 2 each, and 10 total, of the following:

- Daily coordination calls with other GACC office (Redding or Riverside)

- 0830 PDT (South Ops) or 0845 PDT (North Ops) conference call with the NWS
- 1030 PDT Briefing for Ops/ECC personnel
- 1300 PDT Smoke coordination conference calls
- Special briefings and conference calls for CALFIRE and Federal agencies

d) Work with Intel Officer to produce all Predictive Services products
Included in this are the:

- Monthly/Seasonal Outlooks issued by the end of the prior month
- Seasonal Climate and Fire Season Assessments, before early-to-mid high fire season

e) The PSU Program Manager will sign-off on proficiency

2. Currency

a) The forecaster has prepared and issued at least 12 operational products (listed in Sec V.A.1.) during the past three months. At least 3 of the 12 should be site-specific (spot) forecasts.
b) Must maintain proficiency in accordance with NWCG Technical Specialist standards.

D. Technology Transfer

Predictive Services staff integrate advancing technology and prediction systems into fire management planning and operations. Some efforts include:

- Incorporation of CANSAC data into predictive products.
- Use of FireFamily-plus to advise fire Managers/ECCs on fuels conditions and fire danger.
- Proper use of RAWS and NFDRS, and assistance with WIMS, FS PAL, and Pocket Cards.
- Research and development to advance both fire meteorology and climate anomaly forecasting.

Nelson Dead Fuel Moisture Model Implementation in WIMS: In late 2010, the Nelson model and the automated state-of-the-weather were implemented in WIMS as version 2.0.0.

Some highlights related to the integration of the Nelson Model in NFDRS:

- There will be a **parallel integration in Production for at least a year** where both the traditional and the new (Nelson) dead fuel moistures and associated indexes will be computed and displayed.
- **Only the Nelson 1-hr and 10-hr dead fuel moistures will be used initially.** 100-hr, 1000-hr, and live fuels moistures will be computed as always.
- A **new NFDR observation type (N) will allow for comparison** between the Nelson derived and traditional "O" NFDR records.
- Most of the processing is done in the RAWS data ingest program.
- "N" records are created initially at the Station's Regular Scheduled Observation time **and at 6-hour intervals throughout the 24-hr day (i.e. 1300, 1900, 0100, 0700).** We envision station managers being able to select the frequency and times in the near future.
- Hourly data is used to generate these records, so essentially, every six hours the model is run for 6 hours and only the final hour NFDR "N" observation is stored at this point.

WIMS uses hourly observations to **pre-fill the State of Weather (SOW) and Wet Flag**, which are seen by the daily person editing via the EOBS screen. These are set by Solar Radiation (percent of possible for the latitude and date & time) and precipitation amount and duration for the current hour, the previous 3 hours, and the past 24 hours. Users are encouraged to update the calculated SOW and wet flag with human observations if discrepancies are observed.

- A corresponding NFDR record will have already been computed for their regular Observation time. Both the weather and the NFDR record types are "R" at this point. So, **without user intervention there are two NFDR records at 1300**, the pure Nelson (N) and the pre-computed (R) types. Both the (N) and (R) NFDR records will be available to user groups as soon and they are generated.
- **The person editing the (R)** Weather Observation **can modify any of the fields, like SOW/ Wet Flag.** When they *Save*, the NFDR record is recomputed with the updated inputs, and the record type is automatically converted to type "O". Or, they may accept the current values and *Publish* the record(s). In this case, the NFDR type R is automatically converted to 'O' without recomputation. Either way, once the 'O' NFDR record is created, it is then exposed to the general user community, as is the case now.
- Any user changes to the SOW and Wet flag is stored in the Stations Change archive.
- The user ID and date / time the observation was published or edited are captured.
- The Station Level Snow Flag allows for winter operations to continue with minimal human intervention.
- There is **a new interface Module, Display Nelson Solar Radiation (DNSR)** that will aid in tracking and comparing the (O) and (N) NFDR records.
    1. Within DNSR, the 'NFDR Type' field has "O" and "N". You can select to see either just "**N**" (= 4 per day), or "**O&N**" **(**which matches the standard NFDR observation type "O" type with the "N") or "**ALL"** which has the 4 x N plus the matched "O" type.
    2. Shows rain gauge, Solar Radiation (RD) and percent possible (SR%) for that date/hour/latitude.
        - SOW/WF for "N" types are computed from hourly data
        - SOW/WF for "O" types are from the user edited observation for comparison.
    3. 1 and 10 hr FM vary by hour, and between the N and O types, while the 100- and 1000-hour values are the same between types.

E. Fire Weather Observations

1. RAWS and NFDRS Observations - Fire weather observations for stations that desire next-day forecasts should be entered into WIMS no later than 1340 PST (1440 PDT). **Local quality control is a critical element in the data entry process.** Observations from Remote Automated Weather Stations (RAWS) sites will be the observation that is closest to 1300 LST/1400 LDT. In WIMS this can be either a 12xx or 13xx RAWS observation.

RAWS utilized for NFDRS stations, and manual stations utilized for NFDRS are expected to be sited and maintained to the standards published in NWCG PMS 426-3 "National Fire Danger Rating System Weather Station Standards". The website to view this document, and any recent updates to it, is http://www.nwcg.gov/pms/pubs/pubs.htm .

Proper siting of weather stations has always been a high priority in California. The GACC meteorologists are available to assist land or fire managers in selecting proper sites. Annual RAWS maintenance requirements will be strictly adhered to.

2. Fireline Observations and Spot Forecast Feedback -

Fireline Observations – Representative observations are required when requesting a spot forecast, whether for a wildfire, prescribed burn, or other need. Distance is not the only factor in determining whether an observation site is considered representative. Fire agency personnel will take standard fireline observations of temperature, relative humidity, wind direction and speed, and weather/sky condition consistent with guidance provided in NFES 2140 "Weather Station Handbook – An Interagency Guide for Wildland Managers."

Fire agency personnel are encouraged to provide any useful feedback related to the fire or burn with the meteorologist preparing the spot forecast. This can alert the forecaster to details which would otherwise not be apparent, such as variations in humidity across a large and/or complex site, the time at which winds switched from upslope to downslope, etc.

Spot Forecast Feedback and Validation – When providing manual observations (i.e. from a belt weather kit or Kestrel) for use in spot forecasts, prescribed burners should proactively provide feedback to their forecast providers, whether PSU or NWS. This feedback should be made available in a timely manner prior to issuance of the next spot forecast, whichever is first.

Be sure to include the following:

- Sky cover and/or precipitation verification
- Relative humidity
- Wind speed and direction
- Temperature

VI. JOINT RESPONSIBILITIES

The NWS and CWCG use a joint Fire Weather Program Assessment Team (FWPAT) to evaluate fire weather services in California, help ensure coordinated fire weather information between agencies, and recommend improvements.

The NWS and the Predictive Service Units are committed to providing collaborated fire weather information. When operationally significant differences or inconsistencies between adjacent WFO forecasts, or between the two PSUs' products, are identified, the forecasts will be updated. Although the WFOs and PSUs provide different types of fire weather information, in areas where overlap exists it is important to work together to ensure that services reflect similar forecast logic. Options for collaboration are detailed in this AOP.

The CWCG and NWS are committed to working together to resolve problems in near-real time. Issues from either party will be brought to the attention of the appropriate management level

immediately for resolution. Fire managers should first work with their local NWS office for resolution, then the Sacramento Meteorologist-in-Charge and closest PSU, and then the Western Regional Office, Division of Meteorological Services and CWCG representative.

A. California Fire Weather Web Page and Emergency Communication Center Dispatch Area (ECCDA) Forecast Summaries

An interagency fire weather web page for California available at http://www.wrh.noaa.gov/sto/cafw/. Emergency Communication Center Dispatch Area (ECCDA) Forecast Summaries are available from this web site. These simplified fire weather summaries are meant to be used for fire agency radio broadcasts while at the same time providing the most essential daily weather information. Any Red Flag Warning or Fire Weather Watch headlines shown in the ECCDA Forecast Summaries are linked to the actual watch or warning product. All forecast segments within an ECCDA are listed at the beginning of the forecast and can be mouse clicked to jump immediately to that segment.

ECCDA Forecast Summaries are normally available daily by 9:45 a.m. and 4:00 p.m. during high fire season and once per day Monday through Friday (excluding holidays) during the low season. ECCDA Forecast Summaries are not normally updated. Therefore, fire agency personnel should consult the latest FWF and/or RFW issuances for updated information at other times and are directed to do so on the California Fire Weather web page.

B. Training

Meteorological training can be provided by both NWS and GACC PSU meteorologists. The NWS forecast offices primarily handle local courses that occur within their County Warning Areas. The PSU's primary role is with regional and national level courses. Requests for these (regional and national) courses should be directed to either the Redding or Riverside PSU. Each NWS office and PSU should have at least one person qualified to teach courses up through Intermediate Fire Behavior (S-290).

Requests for training from NWS offices should be directed to that office's Fire Weather focal point or Meteorologist-In-Charge. If the office is not able to provide an instructor for a course, that office will assume the responsibility for finding an instructor. Requests for training from the PSUs should be directed to either the Training Coordinator or Team Leader of the PSU. In all cases, sufficient advance notice (≥ six weeks whenever possible) should be given to allow for scheduling and proper preparation.

Costs incurred by NWS in providing training assistance (other than salary costs for a normal non-holiday weekday) will be borne by the requesting agency. Costs incurred by PSU instructors are covered in their annual budget, without need for reimbursement. Below is a table outlining the weather instructor availability for 2011:

Name Of Office	Instructors qualified to teach S-190, S-290	Other Classes that the listed office has at least one meteorologist qualified to instruct in
Redding	Brenda Belongie	S-390, S-490, S-491, RX-410

PSU	John Snook Steve Leach Basil Newmerzhycky	WIMS, S-144, ECCO, RX-341
Riverside PSU	Tom Rolinski Rob Krohn	S-390, S-490, S-491, WIMS
Eureka	Jeff Tonkin Nancy Dean	S-390, S-490, S-590
Hanford	Cindy Bean Dan Harty	S-390, RX-300
Las Vegas	Jim Harrison Mike Staudenmaier	S-390
Medford	Frederic Bunnag Dennis Gettman Brett Lutz	S-390, S-490
Monterey	Ryan Walbrun Matt Mehle	S-390, S-490
Oxnard	Rich Thompson Dave Gomberg	S-390, S-490
Phoenix	Valerie Meyers	S-390, S-490
Reno	Alex Hoon Rhett Milne James Wallmann	S-390
Sacramento	Mike Smith Jason Clapp Steve Goldstein	S-390, S-490, S-590, RX-300
San Diego	Rob Balfour Stefanie Sullivan	S-390, S-490

C. Incident Response

In addition to following direction in the National Mobilization Guide, the following direction is clarification for Command Centers in California:

When an IMET is requested for an incident, **the request will be placed to the GACC.** The GACC will notify the National Fire Weather Operations Coordinator (NFWOC) at NIFC at 1-877-323-IMET (4638).

The GACCs will maintain a list of qualified IMETs and trainees in the Resource Ordering and Staffing System (ROSS) by Weather Forecasting Office identifier, and provide dispatching services for the NWS in California. This list will be updated annually based on the list that is published in the CA Fire Weather Annual Operating Plan. IMETs will be dispatched by the GACCs in California just as if they are GACC employees.

When the NFWOC determines who will fill the incident request, the information will be relayed back to the GACC. If the IMET is within the requesting Geographic area, the IMET will be mobilized using ROSS.

If the IMET is in the California GACC that is not hosting the incident, the request will be placed through Selection Area to the other GACC.

If the identified IMET is not in a California Weather Forecast Office, the IMET request will be edited to add a Name Request and placed up to NICC who will place the request to the appropriate GACC.

The following list designates which California GACC will status and dispatch personnel for the California Weather Forecasting Offices. Status can be maintained Available/Local until requested to reduce work:

North Ops	**South Ops**
Eureka WFO	Hanford WFO
Sacramento WFO	Los Angeles/Oxnard WFO
San Francisco/Monterey WFO	San Diego WFO

IMET personnel from Medford WFO, Reno WFO, Phoenix WFO and Las Vegas WFO shall be requested through NICC to their respective GACC using Name Request.

The procedures for requesting IMETs will follow the guidelines outlined in the National Interagency Agreement, Administrative Procedures section of the current National Mobilization Guide, Personnel section of the current California Mobilization Guide, and CALFIRE Procedure No. 302. Note that for non-Federal incidents, such as a CALFIRE or local government fire, the requesting agency may order either an NWS IMET or a Predictive Services Technical Specialist (THSP) to support their Incident meteorological needs.

The following information will be provided to the requested IMET:

- Name of fire
- Location of fire
- Directions to location where the IMET is to report and location of Incident Base.
- Name of Incident Commander, Plans Chief, and Fire Behavior Analyst, if available.
- Request and Resource Order number for IMET

Additionally, the user agency is responsible for providing adequate shelter to allow the equipment and fire weather meteorologist to function efficiently. This would include a location that is free of excessive dust, heat and moisture, protection from wind and other elements, table, and chair. Transportation and shelter arrangements should be made at the time of request; 120 volt AC power is desirable.

The following is a list of IMETs, Technical Specialists, and All-hazard Meteorological Response System (AMRS) in the Northern and Southern California Area:

Northern and Southern California Area IMETs and Technical Specialists:

(T) designates a trainee

NWS IMETs:

Location	Name	Agency	ROSS Unit ID
Eureka, CA	Jeff Tonkin	NWS	CA-EKAW

Hanford, CA	Cindy Bean	NWS	CA-HNXW
Hanford, CA	Dan Harty	NWS	CA-HNXW
Las Vegas, NV	Jim Harrison	NWS	NV-VEFW
Medford, OR	Frederic Bunnag	NWS	OR-MFRW
Medford, OR	Dennis Gettman	NWS	OR-MFRW
Medford, OR	Brett Lutz	NWS	OR-MFRW
Monterey, CA	Ryan Walbrun	NWS	CA-MTRW
Monterey, CA	Matt Mehle	NWS	CA-MTRW
Oxnard, CA	Rich Thompson	NWS	CA-LOXW
Phoenix, AZ	Valerie Meyers	NWS	AZ-PSRW
Reno, NV	Alex Hoon (T)	NWS	NV-REVW
Reno, NV	Jim Wallmann	NWS	NV-REVW
Sacramento, CA	Jason Clapp	NWS	CA-STOW
Sacramento, CA	Steve Goldstein	NWS	CA-STOW
Sacramento, CA	Mike Smith	NWS	CA-STOW
San Diego, CA	Rob Balfour	NWS	CA-SGXW
San Diego, CA	Stefanie Sullivan (T)	NWS	CA-SGXW

PSU Technical Specialists:

Redding, CA	John Snook	USFS	CA-ONCC
Redding, CA	Basil Newmerzhycky	USFS	CA-ONCC
Redding, CA	Brenda Belongie	USFS	CA-ONCC
Redding, CA	Steve Leach (T)	BLM	CA-ONCC
Riverside, CA	Tom Rolinski	USFS	CA-OSCC
Riverside, CA	Matt Shameson	USFS	CA-OSCC
Riverside, CA	Rob Krohn	USFS	CA-OSCC

AMRS Cache Sites
Each NWS office serving California has at least one AMRS.

D. Briefings

NWS and GACC meteorologists will conduct briefings upon request, time and resources permitting. See Appendix D.

E. Coordination Conference Calls

Coordination conference calls will be conducted, as needed, between the PSUs and the WFOs during fire season. See Appendix D for further details on these calls.

F. WIMS IDs for NFDRS Stations

All NFDRS observation stations are assigned a six-digit station identification number for use in WIMS. The Northern California or Southern California Predictive Services Units must be contacted for assignment of a six-digit number for any new station, or for any changes in location made to existing stations that already have a WIMS ID number. The PSUs will notify the NWS of any new or relocated NFDRS stations.

VII. AGENCY SIGNATURES / EFFECTIVE DATES OF THE AOP

This AOP shall be effective on the date the last signature is placed on this page and will remain in effect until the date the last signature is placed on this page the following year. Updates or amendments may be added in the interim upon agreement of all signatories. Usually the effective dates are May 15 through May 15 the following year.

Agency Signatures

Dated signature on file

_____

Willie Thompson Date
Chair, California Wildfire Coordinating Group

Dated signature on file

_____

Dan Keeton Date
NWS State Liaison Northern California Official

Dated signature on file

_____

Mark Jackson Date
NWS State Liaison Southern California Official

APPENDIX A - Forecast Parameter Definitions

1. General Parameters

Sky/weather – Cloud cover and weather. Weather could include rain, snow, showers, thunderstorms, etc. Cloud cover is as follows:

Clear	5% or less cloud cover
Mostly Clear	6% - 25% cloud cover
Partly Cloudy	26% - 50% cloud cover
Mostly Cloudy	51% - 69% cloud cover
Cloudy/Overcast	70% or greater cloud cover

Temperature and 24 hour trend – Dry bulb temperature extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Humidity and 24 hour trend – Relative humidity extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Wind - 20 foot (10-min) RAWS standard – Surface wind speed and direction as altered by local terrain and surface roughness and measured per instrumentation and siting standards set by NWCG for the RAWS program and NFDRS. In practice, surface wind forecasts produced based on the ASOS standard will be reduced by 20% to obtain 20 ft. winds, except in cases where wide open rangeland or desert is predominant. This same comparison will be used in considering stations other than RAWS to validate forecasts.

Ridgetop winds – Synoptic scale wind speed and direction at or just above mean ridgetop level.

Chance of Rain – Probability of occurrence or aerial coverage of 0.01” or greater liquid equivalent precipitation.

Chance of Wetting Rain (CWR) – Probability of occurrence or aerial coverage of 0.10” or greater liquid equivalent precipitation.

Haines Index – A numerical means to indicate the potential for existing wildfires to experience large growth and or extreme fire behavior (i.e. crowning, spotting, and rapid rates of spread). The Index combines both the instability and dryness of the air by examining the lapse rate between two pressure levels in the atmosphere and the dryness at the lower level. For most of the western United States, the levels used are 700 mb (about 10,000 ft) and 500 mb (about 18,000 ft). The drier and more unstable the atmosphere, the higher the Haines Index and the potential for extreme fuel driven fire behavior. Haines Index values vary from 2 to 6 and classifications are shown below:

HAINES INDEX	POTENTIAL FOR LARGE FIRE GROWTH
2-3	Very Low
4	Low
5	Moderate
6	High

(Haines Index does not include the effects of wind on fire spread.)

2. Lightning Activity Level (LAL)

LIGHTNING ACTIVITY LEVEL GUIDE FOR FIRE WEATHER OBSERVERS					
LAL	Cloud and Storm Development	Areal Coverage	Individual storm cell cloud to ground lightning discharges		
			Counts [1]cg/5 min	Counts [1]cg/15 min	Average [1]cg/min
1	No thunderstorms	None	----	----	----
2	Cumulus clouds are common but only a few reach the towering stage. A single thunderstorm must be confirmed in the rating area. The clouds mostly produce virga but light rain will occasionally reach ground. Lightning is very infrequent.	<15 %	1-5	1-8	<1
3	Cumulus clouds are common. Swelling and towering cumulus cover less than 2/10 of the sky. Thunderstorms are few, but 2 to 3 occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	15-24 %	6-10	9-15	1-2
4	Swelling cumulus and towering cumulus cover 2-3/10 of the sky. Thunderstorms are scattered but more than three must occur within the observation area. Moderate rain is commonly produced, and lightning is frequent.	25-50 %	11-15	16-25	2-3
5	Towering cumulus and thunderstorms are numerous. They cover more than 3/10 and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>50 %	>15	>25	>3
6	Dry lightning outbreak. (LAL of 3 or greater with majority of storms producing little or no rainfall.)	>15 %	----	----	----

[1] Cloud-to-ground lightning discharges

APPENDIX B - NWS Forecast Examples

The most current products issued by the NWS forecast offices can be viewed by clicking on the appropriate office and product identifier in the table below.

1. Fire Weather Planning Forecast (FWF)
2. ECCDA Forecast
3. Activity Planner (PLAN)
4. NFDRS Forecast (see accompanying text for interpretation)
5. Area Forecast Discussion (AFD)
6. Red Flag Warning/Fire Weather Watch (RFW)
7. Spot Forecast (FWS)
8. Internet Spot Request Site (SPOT REQ)

MFR Medford	**EKA** Eureka	**STO** Sacramento	**REV** Reno	**MTR** Monterey	**HNX** Hanford	**VEF** Las Vegas	**LOX** Oxnard	**SGX** San Diego	**PSR** Phoenix
FWF	FWF	FWF	FWF	FWF	FWF	FWF	FWF	FWF	FWF
ECCDA	ECCDA	ECCDA	ECCDA	ECCDA	ECCDA	ECCDA	ECCDA	ECCDA	
PLAN	PLAN	PLAN	PLAN	PLAN	PLAN	PLAN	PLAN	PLAN	PLAN
NFDRS	NFDRS	NFDRS	NFDRS	NFDRS	NFDRS	NFDRS	NFDRS	NFDRS	NFDRS
AFD	AFD	AFD	AFD	AFD	AFD	AFD	AFD	AFD	AFD
RFW	RFW	RFW	RFW	RFW	RFW	RFW	RFW	RFW	RFW
FWS	FWS	FWS	FWS	FWS	FWS	FWS	FWS	FWS	FWS
SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ

NFDRS Forecast Interpretation

a. ZONE/FCST - Shows whether this forecast is a zone trend (ZONE) or station trend (FCST) forecast. Trend forecasts (ZONEs) show how parameters will change over the next 24 hours for a group of stations contained in a given NFDRS trend zone. Note that a trend zone consists of several points rather than an area. The NFDRS trend forecast applies to every station within the trend zone. The WIMS catalogue determines which stations are within a trend zone. Occasionally a station within an NFDRS trend zone is not expected to trend the same way as the rest of the stations in the zone. In those cases, specific point forecast values (FCST) should be made for that station while a zone trend forecast is done which applies to the rest of the stations in the zone group. Specific forecast values (FCST) always are placed after the trend forecasts (ZONEs).

b. **YYMMDD** Year, month, and day valid forecast time.
c. **NO** NFDRS Zone Number (or individual NFDRS station number)
d. **13** Always 1300 LST
e. **WX** Weather valid at 1300 LST tomorrow. Valid entries are:

0	clear
1	scattered clouds (1/8 to 4/8)
2	broken clouds (5/8 to 7/8)
3	overcast clouds (more than 7/8)
4	foggy
5*	drizzle
6*	raining
7*	snowing or sleeting
8	showers (in sight or at the station)
9	thunderstorm

***(Categories 5, 6, or 7 sets NFDRS components and indices to 0...use only with widespread precipitation)**

f. **TEMP** Temperature in deg F valid at 1300 LST for FCST or temperature trend + or - for ZONE
g. **RH** Relative humidity in % valid at 1300 LST for FCST or RH trend + or - for ZONE
h. **LAL1** Lightning Activity Level 1300 LST to 2300 LST
i. **LAL2** Lightning Activity Level 2300 LST to 2300 LST (next day)
j. **WIND** Wind speed in mph valid at 1300 LST for FCST or wind speed trend + or - for ZONE **(20 ft level/10 min avg)**
k. **10HR** 10-hour time lag fuel moisture in % valid at 1300 LST for FCST or trend + or - for ZONE
l. **Tx** Max temperature from 1300 LST to 1300 LST tomorrow
m. **Tn** Min temperature from 1300 LST to 1300 LST tomorrow
n. **RHx** Max relative humidity from 1300 LST to 1300 LST tomorrow
o. **RHn** Min relative humidity from 1300 LST to 1300 LST tomorrow
p. **PD1** Precipitation duration in hours 1300 LST to 0500 LST
q. **PD2** Precipitation duration in hours 0500 LST to 1300 LST
r. **WETFLAG** Y or N. Indicates whether liquid water will be on the fuels at 1300 LST. **(Use with caution – a "Y" will set all the NFDRS indices to zero!)**

The NFDRS trend forecast will follow the comma delimited format as shown:

ZONE,NO,YYMMDD,13,WX,TEMP(trend),RH(trend),LAL1,LAL2,WIND(trend),10HR(trend),PD1,PD2,WETFLAG
FCST,NO,YYMMDD,13,WX,TEMP(trend),RH(trend),LAL1,LAL2,WIND(trend),10HR(trend),PD1,PD2,WETFLAG

In California, the station specific point forecast is not normally used. The format for station specific point forecasts is:

FCST,NO,YYMMDD,13,WX,TEMP(specific),RH(specific),LAL1,LAL2,WIND(specific),10HR(specific),TX(specific),
TN(specific),RHx(specific),RHn(specific),PD1,PD2,WETFLAG

APPENDIX C – Predictive Services Product Examples

The most current products issued by the Predictive Services offices can be viewed by clicking on the appropriate office and product identifier in the table below:

North Ops Redding	**South Ops** Riverside
Daily Weather Outlook	Daily Weather Outlook
7-Day Significant Fire Potential	7-Day Significant Fire Potential
Monthly Outlook	Monthly Outlook
Seasonal Assessment	Seasonal Assessment
Smoke Management	Smoke Management
	Webcast

APPENDIX D – High Season Coordination Calls

Predictive Services Units and National Weather Service Coordination Calls

Coordination conference calls will be conducted as needed (see bullets below) between the Predictive Services Units (PSUs), the National Weather Service (NWS) Weather Forecast Offices (WFOs), and any affected fire agencies. Deployed IMETs should be included in the calls.

The purpose of the call is to produce seamless products between WFOs and also between the Predictive Services Units and WFOs, and to discuss fuel conditions within the targeted area. Calls should be brief and to the point. A Predictive Services Unit meteorologist will facilitate the calls, and the focus of the calls will be in the short term (72 hours).

Calls will be conducted when one or more of the following is occurring:

- Fire Weather Watch/Red Flag Warning is in effect.
- A critical fire weather pattern is expected to develop.
- Large wildfires or wildfires with IMETs deployed
- California is in Planning Level IV or V.
- When requested by the NWS or the fire agencies

Normally, there will be two calls, one for the north and one for the south. There are three WFOs that have forecast areas in both the north and the south. Routinely, Monterey will be on the north and south calls, and Reno and Sacramento will be on the north call. In some instances, one statewide call will be conducted. Calls will be at 0830 LT (South) and 0845 LT (North) during fire season.

Predictive Services will place an unpublished message on the Internet by 0800 PDT to inform the WFOs if a call is necessary, and which WFOs need to be on it.

APPENDIX E – Backup Spot Forecast Request Form (WS FORM D-1)

WS FORM D-1
(1-2005)
(Supersedes Previous Editions)

SPOT REQUEST
(See reverse for instructions)

U.S. Department of Commerce
NOAA
National Weather Service

Please call the NWS Weather Forecast Office (WFO) when submitting a request and also after you receive a forecast to ensure request and forecast were received.
Please provide feedback to WFO on forecast.

1. Time†	2. Date	3. Name of Incident or Project	4. Requesting Agency

5. Requesting Official	6. Phone Number	7. Fax Number	8. Contact Person

9. Ignition/Incident Time and Date

10. Size (Acres)

11. Type of Incident
- ☐ Wildfire
- ☐ Prescribed Fire
- ☐ Wildland Fire Use (WFU)
- ☐ HAZMAT
- ☐ Search And Rescue (SAR)

12. Reason for Spot Request (choose one only)
- ○ **Wildfire**
- ○ **Non-Wildfire** Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA)
- ○ **Non-Wildfire** State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services
- ○ **Non-Wildfire** Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.

13. Latitude/Longitude:

14. Elevation (ft, Mean Sea Level)
Top: **Bottom:**

15. Drainage

16. Aspect

17. Sheltering
- ☐ Full
- ☐ Partial
- ☐ Unsheltered

18. Fuel Type: ___Grass ___Brush ___Timber ___Slash ___Grass/Timber Understory ___Other_____
Fuel Model: 1,2,3 4,5,6,7 8,9,10 11,12,13 2,5,8

19. Location and name of nearest weather observing station (distance & direction from project):

20. Weather Observations from project or nearby station(s): (Winds should be in compass direction e.g. N, NW, etc.)

Place	Elevation	†Ob Time	20 ft. Wind Dir	20 ft. Wind Speed	Eye Level Wind. Dir	Eye Level Wind. Speed	Temp. Dry	Temp. Wet	Moisture RH	Moisture DP	Remarks *(Relevant Weather, etc)*

21. Requested Forecast Period
Date

Start _____

End _____

Forecast needed for:
- ☐ Today
- ☐ Tonight
- ☐ Day 2
- ☐ Extended

22. Primary Forecast Elements (Check all that are needed) *(for management ignited wildland fires, provide prescription parameters):*

	Needed:
Sky/Weather	☐
Temperature	☐
Humidity	☐
20 ft Wind	☐
Valley	☐
Ridge Top	☐
Other (Specify in #23)	☐

23. Remarks (other needed forecast elements, forecast needed for specific time, etc.)

24. Send Forecast to:
ATTN:

25. Location:

26. Phone Number:
Fax Number:

27. Remarks (Special requests, incident details, Smoke Dispersion elements needed, etc.):

EXPLANATION OF SYMBOLS: † Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015
Indicate local standard time or local daylight time

WS FORM D-1, January 2005 INSTRUCTIONS:

I. Incident Personnel:

1. Complete items 1 through 27 where applicable.
   a. Example of weather conditions on site:

13. Weather Observations from project or nearby station(s):

Place	Elevation	†Ob Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture		Remarks *(Relevant Weather, etc.)*
			Dir	Speed	Dir	Speed	Dry	Wet	RH	DP	
Unit G-50	1530'	0830	NW	6-8	NW	3-5	32		72		Observations from unit RAWS station, 50% cloud cover.

   b. If the incident (HAZMAT, SAR) involves marine, put the wave/swell height and direction in the Remarks section.
2. Transmit in numerical sequence or fax to the appropriate Weather Forecast Office. (A weather forecaster on duty will complete the special forecast as quickly as possible and transmit the forecast and outlook to you by the method requested)
3. Retain completed copy for your records.
4. **Provide feedback to NWS utilizing separate page.** Be sure to include a copy of the spot forecast with any feedback submission including forecaster's name. Feedback to NWS personnel is imperative to assist with future forecasts. Remember, feedback on correct forecasts is equally as valuable as feedback on incorrect forecasts! If spot forecast is significantly different than conditions on site, a second forecast may be required.

II. ALL RELAY POINTS should use this form to insure completeness of date and forecast. A supply of this form should be kept by each dispatcher and all others who may be relaying requests for forecasts or relaying completed forecasts to field units.

III. Forms are available from your local National Weather Service Weather Forecast Office. They may also be reproduced by other agencies as needed, entering the phone number and radio identification if desired.

NOTICE: Information provided on this form may be used by the National Weather Service for official purposes in any way, including public release and publication in NWS products. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.

APPENDIX F - NFDRS Table - Site Information, Owners, and NWS Responsibilities

EKA = NWS Eureka, HNX = NWS Hanford, VEF = NWS Las Vegas, LOX = NWS Oxnard, MFR = NWS Medford, MTR = NWS Monterey, REV = NWS Reno, STO = NWS Sacramento, SGX = NWS San Diego

NWS Eureka

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ALDER POINT	40423	State	HUU	556	40.186111	-123.590277	923
BACKBONE	40518	FS	SHF	591	40.888766	-123.142022	4504
BIG BAR	40501	FS	SHF	591	40.742150	-123.249108	1722
BOONVILLE	41001	State	MEU	557	38.987639	-123.347528	618
BRUSH MTN L.O.	40404	FS	SRF	555	40.913962	123.668741	3941
CAMP SIX LOOKOUT	40101	FS	SRF	556	41.830489	-123.876806	3778
EEL RIVER (MNF)	41005	FS	MNF	557	39.825000	-123.083333	1500
EEL RIVER CAMP	40421	State	HUU	556	40.138389	-123.823749	446
FIVE CENT	40520	FS	SHF	591	40.751111	-122.917777	2613
FRIEND MTN	40512	FS	SHF	591	40.505000	-123.343000	4396
GASQUET	40102	FS	KNF	556	41.844961	-123.965837	390
HAYFORK	40503	FS	SHF	591	40.548000	-123.165000	2340
HOOPA	40408	BIA	HIA	555	41.048223	-123.670961	365
KNEELAND	40429	State	HUU	560	40.719944	-123.928278	2724
LAYTONVILLE	41019	State	MEU	557	39.702361	-123.484944	1838
MAD RIVER	40507	FS	SRF	555	40.462999	-123.523309	2775
MCGUIRES	41017	State	MEU	557	39.352667	-123.601167	400
MENDOCINO PASS	41018	FS	MNF	557	39.807098	-122.945883	5328
PATTYMOCUS	40812	FS	SHF	594	40.288333	-122.869999	3889
RODEO VALLEY	41015	State	MEU	557	39.668028	-123.321194	2428
RUTH STATION	40508	FS	SRF	555	40.250585	-123.318665	2732
SCHOOLHOUSE	40425	NPS	RNP	560	41.138333	-123.905556	2640
SCORPION	40517	FS	SHF	591	41.111667	-122.011389	4400
SHIP MTN L.O.	40105	FS	SRF	556	41.727800	-123.794200	5300
SODA CREEK	41406	FS	MNF	557	39.425278	-122.977222	1773
TRINITY CAMP	40516	State	SHU	591	40.786444	-122.804472	3308
UNDERWOOD	40519	FS	SRF	555	40.722222	-123.495277	2560
WESTSIDE	40428	NPS	RNP	560	41.223333	-124.000833	1291
YOLLA BOLLA	40511	FS	SHF	594	40.338000	-123.065000	4786

NWS San Joaquin Valley/Hanford

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ASH MOUNTAIN	44701	NPS	KNP	529	36.491666	-118.824166	1700
BATTERSON	44207	FS	SNF	528	37.378611	-119.628888	3100
BEAR PEAK	44730	BLM	BBD	530	35.884166	-118.051666	8228
BLACKROCK	44722	FS	SQF	534	36.093055	-118.260277	8200
BRECKENRIDGE	45009	FS	SQF	534	35.450556	-118.583888	7548
CAMPO SECO	43209	State	TCU	539	38.223611	-120.866388	399
CASE MOUTAIN	44733	BLM	BBD	529	36.410833	-118.809166	6450
CATHEYS VALLEY	44114	State	MMU	528	37.380250	-120.076972	1234
CEDAR GROVE	44719	NPS	KNP	534	36.790833	-118.660000	4720
CHIM PK	44721	BLM	BDD	530	35.900000	-118.000000	6240
CRANE	44102	NPS	YNP	531	37.759469	-119.820561	6634
DEMOCRAT	45002	FS	SQF	530	35.531667	-118.630277	2356
DINKEY	44521	FS	SNF	533	37.066666	-119.166666	5668
FANCHER CREEK	44516	State	FKU	528	36.883722	-119.475722	916

FENCE MDW	44503	FS	SNF	532	36.966666	-119.183333	5256
FOUNTAIN SPRINGS	44731	State	TUU	529	35.891167	-118.915611	794
HIGH SIERRA	44520	FS	SNF	533	37.314722	-119.039166	7400
HURLEY	44517	State	FKU	529	37.015194	-119.567833	1201
INDIAN WELLS CANYON	45015	FS/BLM	CDD	530	35.684999	-117.889444	4000
JAWBONE	45013	FS/BLM	CDD	530	35.294722	-118.226389	4300
JERSEYDALE	44105	FS	SNF	528	37.544722	-119.835000	3600
JOHNSONDALE	44707	FS	SQF	534	35.971666	-118.545000	4700
KETTLEMAN HILLS	44602	BLM	BBD	526	36.033333	-120.056944	801
LOS BANOS	44003	State	MMU	526	37.054805	-121.053111	302
MARIPOSA	44106	State	MMU	528	37.504070	-119.986860	2227
METCALF GAP	44209	State	MMU	528	37.409417	-119.767944	3077
MIAMI	44110	FS	SNF	532	37.419444	-119.744166	4327
MILO	44708	State	TUU	529	36.231333	-118.869000	1965
MINARETS	44203	FS	SNF	532	37.409722	-119.348611	5180
MT TOM	44511	FS	SNF	533	37.381666	-119.169444	9018
MTREST	44505	FS	SNF	529	37.053611	-119.371667	4100
NORTHFORK	44204	FS	SNF	528	37.233333	-119.506389	2733
OAK OPENING	44717	FS	SQF	529	36.175277	-118.701666	3240
PARK RIDGE	44713	NPS	KNP	532	36.724167	-118.942500	7540
PEPPERMINT	44726	FS	SQF	534	36.072777	-118.534722	7167
PINEHURST	44508	FS	SQF	529	36.685277	-119.000000	4060
PIUTE	45017	FS	SQF	534	35.445556	-118.278333	6400
RATTLESNAKE	44728	NPS	KNP	534	36.411666	-118.425000	8600
RIVER KERN	45016	FS	SQF	530	35.777499	-118.433611	3040
SHADE QUARTER	44724	State	TUU	534	36.567028	-118.959617	4360
SHAVER	44522	State	FKU	528	37.136972	-119.260694	5614
SUGARLOAF	44729	NPS	KNP	534	36.726667	-118.675000	8120
TRIMMER	44510	FS	SNF	529	36.900000	-119.300000	1540
TUOLME	43611	NPS	YNP	531	37.868333	-119.319166	9200
UHL/HOT SPRINGS	44712	FS	SQF	529	35.888900	-118.633300	3764
WALKER PASS	45014	BLM	BBD	530	35.664722	-118.056944	5572
WAWONA	44109	NPS	YNP	531	37.540000	-119.651666	3960
WOLVERTON	44732	NPS	KNP	534	36.440277	-118.701944	5240
WWOLF	43612	NPS	YNP	531	37.850000	-119.650000	8000

NWS Los Angeles/Oxnard

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ACTON	45438	L Gov	LAC	506	34.445833	-118.200000	2600
ARROYO GRANDE	44915	State	SLU	500	35.179056	-120.391833	1048
BEVERLY HILLS	45442	L Gov	LAC	501	34.125000	-118.420277	1260
BIG PINES	45401	FS	ANF	507	34.378889	-117.691944	6917
BRANCH MOUNTAIN	44901	FS	LPF	525	35.183889	-120.083333	3773
CAMP 9	45441	L Gov	LAC	506	34.353056	-118.418333	4000
CARRIZO	44916	BLM	BBD	525	35.096389	-119.012778	2490
CASITAS	45308	FS	LPF	504	34.498175	-119.371245	645
CHEESEBORO	45313	NPS	SAMO	505	34.186575	-118.719561	1650
CHILAO	45436	FS	ANF	507	34.330000	-118.036667	5450
CHUCHUPATE	45302	FS	LPF	503	34.806367	-119.013625	5283
CLAREMONT	45443	L Gov	LAC	509	34.138611	-117.711944	1645
CLEAR CREEK	45405	FS	ANF	506	34.273333	-118.158333	3648
DEL VALLE	45445	L Gov	LAC	505	34.431111	-118.665833	1278
FIGUEROA	45201	FS	LPF	500	34.734442	-120.006572	3179
GRASS MOUNTAIN	45449	FS	ANF	506	34.640833	-118.414167	4626
HENNINGER FLATS	45439	L Gov	LAC	509	34.193056	-118.086944	2800
LA PANZA	44914	State	SLU	525	35.380694	-120.188111	1633
LAKE PALMDALE	45450	L Gov	LAC	519	34.537200	-118.101400	2980

LAS TABLAS	44904	State	SLU	520	35.656472	-120.924139	994
LEO CARRILLO	45447	L Gov	LAC	501	34.045556	-118.935833	50
LOS PRIETOS	45203	FS	LPF	500	34.544458	-119.791131	977
MALIBU	45433	L Gov	LAC	505	34.058333	-118.633333	1575
MALIBU CANYON	45452	L Gov	LAC	505	34.083889	-118.703333	610
MILL CREEK	45435	FS	ANF	507	34.388333	-118.089999	4999
MONTECITO	45218	FS	LPF	501	34.461397	-119.649014	1617
NEWHALL PASS	45454	L Gov	LAC	505	34.336944	-118.520278	2135
OZENA	45303	FS	LPF	503	34.681778	-119.353731	3690
POPPY PARK	45440	L Gov	LAC	519	34.732500	-118.383333	2760
ROSE VALLEY II	45314	FS	LPF	503	34.543386	-119.184931	3328
SADDLEBACK BUTTE	45444	L Gov	LAC	519	34.668333	-117.820833	2590
SAN RAFAEL HILLS	45451	L Gov	LAC	505	34.194444	-118.212528	1770
SANTA CRUZ ISLAND	45216	NPS	CNP	501	33.994200	-119.717253	292
SANTA FE	45437	L Gov	LAC	501	34.120833	-117.945833	500
SANTA ROSA ISLAND	45217	NPS	CNP	501	33.978883	-120.078800	1284
SAUGUS	45412	L Gov	LAC	505	34.425000	-118.525000	1450
TANBARK	45421	FS	ANF	509	34.200000	-117.756666	2730
TEMESCAL	45307	FS	LPF	505	34.473944	-118.761564	1122
TONNER CANYON	45453	L Gov	LAC	509	33.947500	-117.822222	1340
VANDENBERG	45220	FS	LPF	500	34.758647	-120.485969	1019
WARM SPRINGS L.O.	45426	FS	ANF	506	34.595000	-118.576667	4930
WHITAKER	45448	L Gov	LAC	506	34.568611	-118.740278	4120
WHITTIER HILLS PARK	45446	L Gov	WIT	501	33.984444	-118.007500	950

NWS Medford

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ASH CREEK	40244	FS	SHF	584	41.2760	-121.979000	3700
BLUE RIDGE (KNF)	40203	FS	KNF	586	41.269083	-123.189003	5885
BRAZZI RANCH	40242	State	SKU	588	41.675917	-122.598777	3090
CALLAHAN #2	40245	FS	KNF	587	41.299764	-122.825535	3911
COLD SPRINGS	40314	FS	MDF	590	41.781667	-120.318333	6313
COLLINS BALDY LO	40237	FS	KNF	587	41.775166	-122.951929	5493
DEVIL'S GARDEN	40309	State	LMU	590	41.528528	-120.671472	5049
DUTCH-INDY	40246	FS	KNF	587	41.643889	-123.443888	2310
INDIAN WELL	40233	NPS	BNP	590	41.734722	-121.544176	5049
JUANITA	40240	FS	KNF	589	41.801986	-122.109853	5176
LOWER KLAMATH	40310	FWS	KBR	589	41.999167	-121.011667	4098
MT SHASTA	40217	FS	SHF	584	41.315554	-122.316571	3591
OAK KNOLL	40218	FS	KNF	587	41.838364	-122.850128	1954
QUARTZ HILL	40239	State	SKU	587	41.599111	-122.933666	4225
ROUND MOUNTAIN	40221	FS	MDF	590	41.419999	-121.458333	5258
RUSH CREEK	40312	FS	MDF	590	41.294444	-120.869444	4720
SAWYERS BAR	40222	FS	KNF	586	41.301100	-123.129700	2514
SLATER BUTTE	40225	FS	KNF	585	41.858340	-123.353761	4612
SOMES BAR	40231	FS	SRF	586	41.390361	-123.492210	904
TIMBER MOUNTAIN	40306	FS	MDF	590	41.634722	-121.300833	5140
VAN BREMMER	40243	FS	KNF	589	41.642972	-121.794772	5310
WEED	40228	State	SKU	588	41.478917	-122.454611	2929

NWS San Francisco Bay Area/Monterey

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ALTAMONT	43407	State	SCU	511	37.693028	-121.609333	1436
ARROYO SECO	44301	FS	LPF	522	36.235481	-121.479881	879

ATLAS PEAK	42108	State	LNU	507	38.474872	-122.264800	1934
BARNABY	42308	L Gov	MRN	559	38.027777	-122.706944	820
BEN LOMOND	43809	State	CZU	549	37.131994	-122.170000	2630
BIG ROCK	42310	L Gov	MRN	559	38.048333	-122.622222	1500
BIG SUR	44302	FS	LPF	521	36.234244	-121.780150	354
BLACK DIAMOND	43008	L Gov	EBY	547	37.950000	-121.884444	1600
BRADLEY	44303	State	BEU	523	35.864389	-120.802972	537
BRIONES	43010	L Gov	EBY	547	37.934167	-122.129444	1450
CALAVERAS RD	43405	L Gov	SCU	547	37.553056	-121.844167	1230
CORRALITOS	43802	State	CZU	550	36.990861	-121.805389	327
DIABLO GRANDE	43502	State	SCU	546	37.329305	-121.295472	1850
HASTINGS	44319	State	BEU	522	36.388538	-121.551611	1885
HAWKEYE	42010	State	LNU	559	38.735111	-122.837083	2024
HERNANDEZ	44409	State	BEU	524	36.382583	-120.855833	3733
HOLLISTER	44406	State	BEU	523	36.842222	-121.362166	404
HUNTER LIGGET	44317	FS	LPF	522	36.011811	-121.241728	1120
LA HONDA	43304	State	CZU	549	37.305222	-122.255306	872
LAS TRAMPAS	43009	L Gov	EBY	547	37.833889	-122.066944	1760
LOS ALTOS	43912	L Gov	SCU	549	37.355000	-122.141944	539
LOS GATOS	43913	L Gov	SCU	549	37.204166	-121.950833	1842
LOS VAQUEROS	43013	L Gov	SCU	547	37.788333	-121.736666	1120
MALLORY RIDGE	43011	L Gov	SCU	547	37.817222	-121.778888	2040
MIDDLE PEAK	42312	LGov	MRN	507	37.927777	-122.587222	2339
MT DIABLO	43012	L Gov	SCU	547	37.873333	-121.910000	3849
OAKLAND NORTH	43402	L Gov	EBY	550	37.865193	-122.220900	1495
OAKLAND SOUTH	43403	L Gov	EBY	550	37.786242	-122.144756	1197
PANOCHE	44514	State	FKU	524	36.727055	-120.765861	595
PARKFIELD	44310	State	BEU	524	35.898417	-120.432389	1507
PINNACLES	44410	NPS	PIP	524	36.470833	-121.147222	1322
POVERTY	43914	L Gov	SCU	550	37.443056	-121.770833	2067
PULGAS	43309	L Gov	CZU	549	37.475000	-122.286111	644
ROSE PEAK	43404	L Gov	EBY	547	37.501944	-121.735556	3060
SAN JOSE	43915	L Gov	SCU	511	37.398547	-121.807019	726
SANTA RITA	44408	BLM	BBD	524	36.347778	-120.597778	5000
SANTA ROSA	42009	State	LNU	559	38.478499	-122.711833	576
SPRING VALLEY	43308	L Gov	CZU	549	37.561666	-122.435555	1075
WOODACRE 2	42309	L Gov	MRN	559	37.990556	-122.644722	1400

WS Phoenix

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
FISH CREEK MTN.	45802	BLM	CDD	310	32.983055	-116.057499	760
RICE VALLEY	45620	BLM	CDD	232	34.062500	-114.707222	820
SQUAW LAKE	45801	BLM	CCD	310	32.908333	-114.494444	400

NWS Reno

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ASH VALLEY	40726	BLM	SUD	572	41.051944	-120.686111	5100
BEAR FLAT	40313	FS	MDF	590	41.295278	-120.313889	6828
BENTON	43708	FS	INF	518	37.843056	-118.483889	5377
BLUE DOOR	40725	BLM	NOD	572	41.054722	-120.337499	5615
BOGARD	40703	FS	LNF	598	40.592066	-121.077927	5666
BRIDGEPORT	43702	FS	HTF	576	38.248388	-119.219722	6560
BULL FLAT	40728	BLM	NOD	572	40.480833	-120.113888	4395
COYOTE	49902	FS	PNF	598	39.987778	-120.476666	5548
CRESTVIEW	43709	FS	INF	518	37.737431	-118.996605	7561
DEXTER	43711	FS	INF	518	37.838916	-118.771682	7982

DOG VALLEY	41302	FS	TYF	450	39.571666	-120.038333	5880
DOYLE	40724	BLM	NOD	450	40.49166	-120.093611	4240
GORDON	40730	FS	LNF	598	40.758611	-120.896111	6200
GRASSHOPPER	40721	State	LMU	598	40.781694	-120.784361	6058
HORSE LAKE	40727	BLM	NOD	572	40.630000	-120.502000	5100
JUNIPER CREEK	40308	BLM	NOD	572	41.332222	-120.472500	4372
LAUFMAN	40709	FS	PNF	599	40.141667	-120.353333	4800
MARKLEEVILLE	42802	FS	TOF	576	38.684999	-119.768333	5501
MEYERS	42607	FS	TMU	542	38.845000	-120.015000	6337
PIERCE	40915	FS	PNF	598	40.246111	-120.642222	5811
RAVENDALE	40714	BLM	NOD	572	40.754166	-120.333333	5491
ROCK CREEK	43710	FS	INF	518	37.559836	-118.678408	7095
STAMPEDE	41310	FS	TNF	541	39.483333	-120.075000	6600
WALKER	43707	FS	TYF	576	38.570000	-119.455000	5680

NWS San Diego

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ALPINE FIRE STATION	45701	FS	CNF	509	32.834231	-116.740164	2042
AMMO DUMP	45738	DOD	MCP	508	33.381944	-117.285555	1068
ANZA	45616	State	RRU	513	33.555861	-116.674528	3939
BEAUMONT	45617	State	RRU	510	33.930499	-116.949917	2604
BELL CANYON	45735	L Gov	ORC	509	33.551803	-117.572966	764
BIG PINE FLAT	45102	FS	BDF	511	34.320000	-117.013800	6861
BURNS CANYON	45125	BLM	CDD	516	34.208333	-116.620833	6000
CAMERON FIRE STA	45704	FS	CNF	513	32.721189	-116.464669	3264
CAMP ELLIOTT	45741	DOD	MFD	508	32.859250	-117.105694	539
CASE SPRINGS	45731	DOD	MCP	508	33.450000	-117.429722	2320
CLARK TRN CTR	45624	State	RRU	509	33.877166	-117.304111	1637
CONVERSE	45105	FS	BDF	511	34.194059	-116.913112	5618
CORONA FIRE STATION	45618	FS	CNF	509	33.875622	-117.550872	624
CRANSTON	45603	FS	BDF	512	33.737458	-116.838158	1930
DESCANSO FIRE STA	45707	FS	CNF	513	32.857389	-116.622392	3563
DEVORE	45113	State	BDU	510	34.221083	-117.404333	2057
EL CARISO FIRE STA	45619	FS	CNF	509	33.663753	-117.411988	2727
FAWNSKIN	45101	FS	BDF	511	34.266358	-116.899027	6936
FREMONT CANYON	45736	L Gov	ORC	509	33.811142	-117.708347	1782
GOOSE VALLEY_FIRE	45724	FS	CNF	509	33.073531	-116.844858	1539
HEAPS PEAK	45133	FS	BDF	511	34.234192	-117.140058	6394
JULIAN	45708	State	MVU	513	33.075639	-116.591750	4238
KEENWILD	45604	FS	BDF	513	33.708325	-116.716939	4706
KENWORTHY	45605	FS	BDF	513	33.617125	-116.621714	4562
LAS FLORES	45733	DOD	MCP	508	33.290000	-117.450000	100
LITTLE TUJUNGA	45411	FS	ANF	509	34.301388	-118.368333	1390
LYTLE CREEK	45108	FS	BDF	510	34.234153	-117.480142	2719
MILL CREEK	45109	FS	BDF	510	34.079832	-117.046761	2511
MORMON ROCKS	45114	FS	BDF	511	34.316944	-117.503888	3300
MT LAGUNA	45709	FS	CNF	513	32.881133	-116.428900	5730
OAK GROVE FIRE STA	45710	FS	CNF	513	33.386169	-116.791450	2767
PALOMAR	45740	FS	CNF	513	33.352042	-116.862736	5480
PINE HILLS FIRE STA	45711	FS	CNF	513	33.016642	-116.635401	3647
POTRERO	45730	State	MVU	513	32.605861	-116.608833	2345
RANCHITA	45729	State	MVU	513	33.222277	-116.497444	4415
ROCK CAMP	45111	FS	BDF	511	34.288888	-117.212500	4900
SAN MIGUEL	45737	FWS	TSR	509	32.686000	-116.978000	425
SANTA ROSA PLATEAU	45623	State	RRU	513	33.518166	-117.229111	1987
TALEGA	45739	DOD	MCP	508	33.474722	-117.486666	1203
TEMESCAL FIRE STA	45611	FS	CNF	509	33.762803	-117.483656	1123

VALLEY CENTER	45734	State	MVU	509	33.237083	-117.008555	1483
VALYERMO	45423	FS	ANF	514	34.446666	-117.845000	3700
VISTA GRANDE	45612	FS	BDF	513	33.836092	-116.811248	4906
YUCCA VALLEY	45112	State	BDU	516	34.124055	-116.408000	3246

NWS Sacramento

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ALDER SPRINGS	41101	FS	MNF	595	39.651749	-122.724150	4500
ARBUCKLE BASIN	40632	State	SHU	595	40.437972	-122.829805	2452
BALD MOUNTAIN	42603	FS	ENF	538	38.900833	-120.685555	4613
BANGOR	41201	State	BTU	596	39.380777	-121.386194	803
BEAVER	42601	FS	ENF	538	38.519444	-120.327777	5700
BEN BOLT	42612	State	AEU	552	38.590833	-120.933611	905
BROOKS	42202	State	LNU	558	38.738389	-122.14475	354
BUCK MEADOWS	43603	FS	STF	539	37.823333	-120.097500	3200
CARPENTER RIDGE	41213	State	BTU	597	40.068611	-121.562694	4812
CASHMAN	40916	FS	PNF	599	40.001944	-120.915000	4448
CHESTER	40904	FS	LNF	597	40.296999	-121.243950	4530
CHICO	41210	State	BTU	596	39.712083	-121.780694	237
COHASSET	41211	State	BTU	596	39.871833	-121.768972	1733
CORNING	40814	State	TGU	595	39.939083	-122.168666	289
COTTAGE	43210	FS	STF	539	38.346036	-120.229300	6058
COUNTY LINE	41410	BLM	NOD	557	39.018889	-122.411944	2085
DUNCAN PEAK	41901	FS	TNF	536	39.143889	-120.508889	7182
EAGLE PEAK	40802	FS	MNF	595	39.927778	-122.640278	3713
ESPERANZA	43208	State	TCU	539	38.242639	-120.514833	2512
GREEN SPRING	43613	State	TCU	539	37.834194	-120.503027	1108
HELL HOLE	42608	FS	ENF	538	39.071667	-120.421666	5240
HIGH GLADE LOOKOUT	41402	FS	MNF	595	39.208333	-122.808333	4840
JARBO GAP	41214	State	BTU	599	39.735944	-121.488944	2485
KONOCTI	41411	State	LNU	558	38.911917	-122.706444	2163
LADDER BUTTE	40723	FS	LNF	597	40.807222	-121.296667	5644
LASSEN LODGE	40815	State	TGU	597	40.344139	-121.713722	4159
LINCOLN	41907	State	NEU	554	38.882499	-121.268305	200
MANZANITA LAKE	40609	FS	LNF	597	40.540114	-121.580164	5725
MOUNT ZION	42701	State	AEU	552	38.390055	-120.652388	2967
MTELIZ	43605	FS	STF	539	38.063055	-120.246944	4938
MULE MOUNTAIN	43637	NPS	WNP	595	40.566330	-122.504390	2064
OAK MTN	40635	FS	SHF	593	41.006000	-121.983000	2670
OWENS CAMP	42611	FS	ENF	538	38.733333	-120.250000	5240
PIKE CNTY LO	41701	FS	PNF	599	39.475000	-121.202500	3714
PILOT HILL	42609	State	AEU	552	38.831666	-121.009250	1249
QUINCY	40910	FS	PNF	599	39.973333	-120.941944	3652
READER RANCH	41809	State	NEU	535	39.303555	-121.117249	1968
REDDING	40611	FS/State	SHU	595	40.515792	-122.292175	499
SACRAMENTO NWR	41102	FWS	MNF	595	39.366666	-122.150000	95
SADDLEBACK	41304	FS	TNF	536	39.637500	-120.86389	6690
SECRET TOWN	41808	State	NEU	535	39.183777	-120.884639	2826
SEEDORCHARD	41908	FS	TNF	536	39.091561	-120.731934	4355
SIMS	40618	FS	SHF	593	41.073333	-122.373333	2580
SOLDIER MTN	40630	State	SHU	593	40.926472	-121.584583	3704
STEELY FORK	42615	FS	ENF	538	38.626139	-120.527811	4006
STONYFORD	41503	FS	MNF	595	39.367286	-122.572889	1263
SUGARLOAF (SHF)	40614	FS	SHF	592	40.916000	-122.438000	3214
THOMES CREEK	40816	State	TGU	595	39.854277	-122.609944	1129
WESTWOOD	40719	State	LMU	597	40.306000	-120.902250	6155

WHISKEYTOWN HQ2	40629	NPS	WNP	595	40.610514	-122.527314	1332
WHITECLOUD	41806	FS	TNF	536	39.319464	-120.842974	4320
WHITMORE	40615	State	SHU	596	40.619500	-121.899555	245
YOLLA BOLLA	40511	FS	SHF	594	40.338000	-123.065000	4786

NWS Las Vegas

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	FCST ZONE	LATITUDE	LONGITUDE	ELEV
GRANITE MTN.	45124	BLM	CDD	543	34.535556	-117.025833	4720
HORSE THIEF SPRING	45129	BLM	CDD	543	35.770555	-115.909166	5000
HUNTER MOUNTAIN	44809	NPS	DVL	543	36.550000	-117.473611	6880
LOST HORSE	45614	NPS	JOT	543	34.002222	-116.183888	4100
MID HILLS	45128	BLM	CDD	543	35.166111	-115.415277	5413
MOJAVE RIVER SINK	45122	BLM	CDD	543	35.058333	-116.083333	950
OAK CREEK	44804	FS	INF	517	36.833333	-118.252222	4280
OPAL MOUNTAIN	45127	BLM	CDD	543	35.156944	-117.176944	3240
OWENS VALLEY	44803	State	BDU	517	37.391000	-118.552555	4640
PANAMINT	44806	BLM	CDD	543	36.116666	-117.083333	6880
SALT WELLS	45120	BLM	CDD	543	35.833333	-117.583333	2540

APPENDIX G - Contact Information for WFOs and PSUs

NORTHERN CALIFORNIA PSU/PREDICTIVE SERVICES UNIT
6101 Airport Road, Redding, CA 96002-9423
FAX Number: (530) 226-2742
Web Site Address: http://gacc.nifc.gov/oncc/predictive/weather/index.htm
Office E-mail: redding.fwx@fire.ca.gov
Office Hours::Early May to early Nov: 7am – 5pm daily; rest of year: 7am – 5pm M-F

Name	Position	E-Mail
John Snook	USFS GACC Meteorologist/PS Unit Mgr.	jsnook@fs.fed.us
Marva Willey	Fire Intelligence Coordinator	mwilley@fs.fed.us
Rob Holt	Fire Intelligence Officer	rjholt@fs.fed.us
Russ Gripp	NFDRS/WIMS/RAWS Lead	rgripp@fs.fed.us
Basil Newmerzhycky	USFS GACC Meteorologist	bnewmerzhycky@fs.fed.us
Brenda Belongie	USFS GACC Meteorologist	bbelongie@fs.fed.us
Steve Leach	BLM GACC Meteorologist	sleach@ca.blm.gov

SOUTHERN CALIFORNIA PSU/PREDICTIVE SERVICES UNIT
2524 Mulberry Street, Riverside, CA 92501-2200
FAX Number: (951) 276-6439
Web Site Address: http://gacc.nifc.gov/oscc/predictive/weather/index.htm
Office E-mail: riverside.fwx@fire.ca.gov
Office Hours: Fire season: 7am–5pm daily. Low season: 7am – 5pm M-F

Name	Position	E-Mail
Tom Rolinski	USFS GACC Meteorologist/PS Unit Mgr.	thomasrolinski@fs.fed.us
Matt Shameson	USFS GACC Meteorologist	mshameson@fs.fed.us
Rob Krohn	USFS GACC Meteorologist	rkrohn@fs.fed.us
Bruce Risher	Intelligence Coordinator	brisher@fs.fed.us
Vince Cohee	Intelligence Officer	vincecohee@fs.fed.us

EUREKA NWS WEATHER FORECAST OFFICE
300 Startare Drive, Eureka, CA 95501-6000
FAX Number: (707) 443-6195
Web Site Address: http://www.weather.gov/eureka
Backup Offices: WFO Monterey and WFO Medford

Name	Position	E-Mail
Jeff Tonkin	Fire Weather Program Mgr/IMET	jeff.tonkin@noaa.gov
Troy Nicolini	Warning Coord. Meteorologist	troy.nicolini@noaa.gov
Nancy Dean	Meteorologist-In-Charge	nancy.dean@noaa.gov

HANFORD/SAN JOAQUIN VALLEY NWS WEATHER FORECAST OFFICE
900 Foggy Bottom Road, Hanford, CA 93230-5236
FAX Number: (559) 584-1152
Web Site Address: http://www.weather.gov/hanford
Backup Office: WFO Sacramento

Name	Position	E-mail
Cindy Bean	Fire Weather Program Mgr/IMET	cynthia.bean@noaa.gov
Dan Harty	IMET	daniel.harty@noaa.gov
James Brotherton	Warning Coord. Meteorologist	james.brotherton@noaa.gov
Steve Mendenhall	Meteorologist-In-Charge	steven.mendenhall@noaa.gov

LAS VEGAS NWS WEATHER FORECAST OFFICE
7851 S. Dean Martin Dr., Las Vegas, NV 89139-6628
FAX Number: (702) 263-9759
Web Site Address: http://www.weather.gov/lasvegas
Backup Offices: WFO Reno and WFO Elko

Name	Position	E-mail
Jim Harrison	Fire Weather Program Mgr/IMET	jim.harrison@noaa.gov
Faith Borden	Warning Coord. Meteorologist	faith.borden@noaa.gov
Mike Staudenmaier	Meteorologist-In-Charge	michael.staudenmaier@noaa.gov

LOS ANGELES/OXNARD NWS WEATHER FORECAST OFFICE
520 N. Elevar Street, Oxnard, CA 93030
FAX Number: (805) 988-6613
Web Site Address: http://www.weather.gov/losangeles
Backup Office: WFO San Diego

Name	Position	E-Mail
Dave Gomberg	Fire Weather Program Mgr	david.gomberg@noaa.gov
Rich Thompson	IMET/ Asst. Program Manager	richard.a.thompson@noaa.gov
Eric Boldt	Warning Coord. Meteorologist	eric.boldt@noaa.gov
Mark Jackson	Meteorologist-in-Charge	mark.jackson@noaa.gov

MEDFORD NWS WEATHER FORECAST OFFICE
4003 Cirrus Drive, Medford, OR 97504
FAX Number: (541) 776-4333
Web Site Address: http://www.weather.gov/medford
Backup Office: WFO Eureka

Name	Position	E-mail
Frederic Bunnag	Fire Weather Program Mgr/IMET	frederic.bunnag@noaa.gov
Dennis Gettman	IMET	dennis.gettman@noaa.gov
Brett Lutz	IMET	brett.lutz@noaa.gov
Ryan Sandler	Warning Coord. Meteorologist	ryan.sandler@noaa.gov
John Lovegrove	Meteorologist-In-Charge	john.lovegrove@noaa.gov

PHOENIX NWS WEATHER FORECAST OFFICE
PAB 500, P.O. Box 52025, Phoenix, AZ 85072-2025
FAX Number: (602) 267-8051
Web Site Address: http://www.weather.gov/phoenix
Backup Office: WFO Tucson

Name	Position	E-mail
Valerie Meyers	Fire Weather Program Mgr/IMET	valerie.meyers@noaa.gov
Ken Waters	Warning Coord. Meteorologist	ken.waters@noaa.gov
Gary Woodall	Meteorologist-In-Charge	gary.woodall@noaa.gov

RENO NWS WEATHER FORECAST OFFICE
2350 Raggio Parkway, Reno, NV 89512-3900
FAX Number: (775) 673-8110
Web Site Address: http://www.weather.gov/reno
Backup Office: WFO Elko

Name	Position	E-mail
Alex Hoon	Fire Weather Program Mgr/ IMET Trainee	alexander.hoon@noaa.gov
James Wallmann	IMET	james.wallmann@noaa.gov
Rhett Milne	Warning Coord. Meteorologist/	rhett.milne@noaa.gov

SACRAMENTO NWS WEATHER FORECAST OFFICE
3310 El Camino Ave, Room 228, Sacramento, CA 95821
FAX Number: (916) 979-3052
Web Site Address: http://www.weather.gov/sacramento
Backup Office: WFO San Joaquin Valley/Hanford

Name	Position	E-mail
Steve Goldstein	Fire Weather Program Mgr/IMET	steve.goldstein@noaa.gov
Mike Smith	IMET	michael.c.smith@noaa.gov
Jason Clapp	IMET	jason.clapp@noaa.gov
Kathy Hoxsie	Warning Coord. Meteorologist	kathryn.hoxsie@noaa.gov
Dan Keeton	Meteorologist-In-Charge	dan.keeton@noaa.gov

SAN DIEGO NWS WEATHER FORECAST OFFICE
11440 W. Bernardo Ct, Ste 230, San Diego, CA 92127
FAX Number: (858) 675-8717 or 8712
Web Site Address: http://www.weather.gov/sandiego
Service Backup Office: WFO Los Angeles/Oxnard

Name	Position	E-mail
Stefanie Sullivan	Fire Weather Program Mgr/ IMET (trainee)	stefanie.sullivan@noaa.gov
Rob Balfour	IMET/Asst Program Mgr	rob.balfour@noaa.gov
Alex Tardy	Warning Coord. Meteorologist	alexander.tardy@noaa.gov
Jim Purpura (through 7/2)	Meteorologist-In-Charge	jim.purpura@noaa.gov
Roger Pierce (starting 7/3)		roger.pierce@noaa.gov

SAN FRANCISCO BAY AREA/MONTEREY NWS WEATHER FORECAST OFFICE
21 Grace Hopper Ave, Stop 5, Monterey, CA 93943
FAX Number: (831) 656-1747
Web Site Address: http://www.wrh.noaa.gov/mtr
Service Backup Office: WFO Los Angeles/Oxnard

Name	Position	E-mail
Ryan Walbrun	Fire Weather Program Mgr/IMET	ryan.walbrun@noaa.gov
Matt Mehle	IMET	matthew.mehle@noaa.gov
Tom Evans	Warning Coord. Meteorologist	tom.evans@noaa.gov
David Reynolds	Meteorologist-In-Charge	david.reynolds@noaa.gov